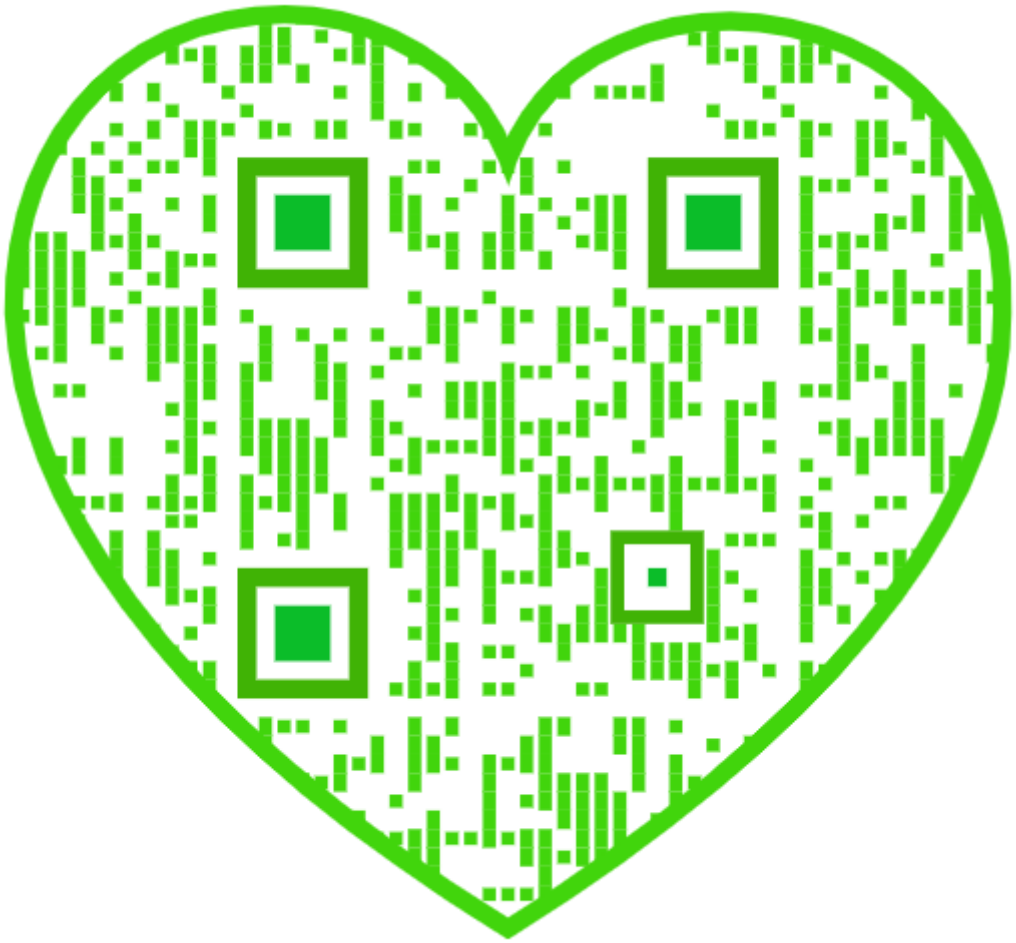
SHOEING AND BALANCING
THE
LIGHT HARNESS HORSE

JAMES CLARK



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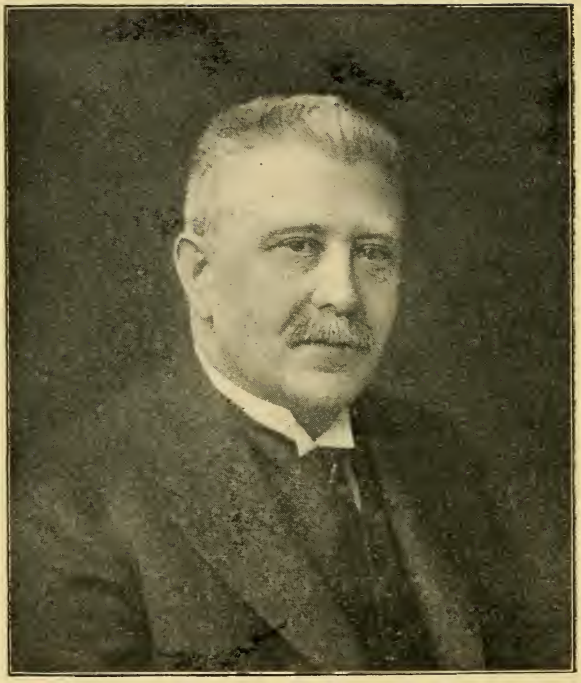

Cordially Yours
James Clark

SHOEING AND BALANCING THE LIGHT HARNESS HORSE

BY
JAMES CLARK

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INTRODUCTORY

The mechanism of the horse's foot is something marvelous, and the study of its anatomy and the relation of shoeing to the proper balance and ultimate success of the light harness horse, is indeed a fascinating one. It requires but a moment's reflection to convince one that the success of the entire scheme of the light harness horse industry depends on the proper treatment of the juvenile trotter and pacer, for if we were to eliminate from the annals of turf history the brilliant performances of the two-year-olds and the three-year-olds, to say nothing of the wonderful performances of the yearling trotters and pacers, from their first performance to their ultimate success on the turf, the story would lose its most attractive pages. To be sure, there are many horses that have performed brilliantly on the trotting turf that were not known as colt trotters or pacers, but they are in the minority.

I do not mean to say that the great majority of our trotters and pacers were great as juve-

niles; what I mean is, that the great majority of them could perform meritoriously; and had their early treatment, shoeing, training and general management been better and more intelligently conducted there is no question that many horses that are classed in the records as mediocre would have attained championship, or near-championship honors. On the other hand, there are, no doubt, hundreds of others in the standard list that would never have been known had it not been for the lessons taught them in the first two or three years of their existence. Consequently, too much emphasis cannot be put on the importance of intelligent treatment of the youngsters in every respect, for the little fellow in the kindergarten today is the big fellow on the Grand Circuit tomorrow.

The great interest that has been manifested by all classes of harness horsemen in the youngsters of late, an interest that is constantly increasing, I am pleased to be able to say, and the hundreds of enquiries I have received from all parts of the country since I have been on The Horse World staff, for a work devoted to this subject, prompted me to write this little book. If you are looking for something elaborate, something couched in collegiate language, and clothed in a mantle of high-brow verbiage, you would better draw and go to the stable, because you are outside the money right now. What there is of this is written in plain English, for two reasons: It is intended more for the beginners, the

shoer, owner and trainer, than for the experienced in the business, although the wisest may possibly be benefited in a small way by a careful perusal of its contents. My other reason for writing very plainly is that it is the only language I am familiar with.

Writing a book of this size looks easy, but it is not in this instance, because I have condensed everything, trying to put in clear and concise form, in these few pages, information that could easily be made to fill a book twenty-five times as large as this one. If, however, you and the central figure in your dreams of glory on the trotting tracks, are in the least benefited by reason of its having been written, I shall feel well repaid for my humble efforts in your behalf.

JAMES CLARK.

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CHAPTER I.

The Treatment of the Colt's Feet Before Shoeing.

The care of the colt's feet should begin when he is but a few weeks old. His troubles begin as soon as he is foaled. Usually when he first essays to stand he has to "prop" himself to keep from falling. With his feet and legs spread wide apart, front toes turned out and his shoulder blades twisted back against his little body, he sways and totters while suckling his dam. If he is a large foal and his dam is of the low, blocky type, it makes matters worse, for right there is being laid the foundation for a first-class knee-hitter.

The weight, as he stands, is on the inside lateral quarters of his front feet; the delicate wall is forced under and upward, causing the foot to grow out of line—more to the outside of the center of the column of bones than to the inside; the toe of the foot points out, the shoulder blades point in toward the body instead of on a line with it, and gradually as the colt grows larger and heavier, the front legs begin to curve slightly inward at the knees. If something is not done at this time, while the bones, ligaments, muscles and cartilages are in a pliable condition, to remedy the growing malformation of the youngster's feet and

legs, he will develop into a worthless, nerve-racking knee-hitter, and it will cost you considerable money when you find it out, after he is grown, in your efforts to remedy a defect that should have been attended to before he had reached his first birthday.

After a colt is weaned and he is in pasture, you will notice that, while eating, he sprawls out in front and the constant dropping of his head to the ground forces the shoulder blades back, so that when he picks up his front foot it folds under his body nine times out of ten, instead of on a line with it. Youngsters are practically in the same position in box stalls while eating hay off the floor, the only difference being that at that period in their lives they are much stronger and if the feet and legs have been properly cared for before that time, there is little danger of their becoming crooked if the feet are regularly and properly dressed.

If you will take the pains to stand the very young colt on a smooth surface and have his legs massaged and gently twisted so that the feet stand squarely in front of him, putting them back into the position nature intended they should occupy, you will be doing something that will bring good results. The outside of the foot should be dressed so that he stands level, not rocked out; and the toe of the foot should be slightly squared so that in walking or trotting he will break over in perfect line with the pastern joints. Massaging or hand rubbing a colt's front legs in this manner, twice a week, will do much towards keeping them straight. In dressing a foot to keep

it straight do not take it all off from the bottom; run the rasp around the edges, leaving them round and smooth, therefore less liable to crack and "sliver up."

The foregoing has to do principally with the front feet; usually the hind feet cause less trouble, either in the colt or aged trotter. It is the front feet that are constantly getting in the way. But there is one thing in connection with the youngster's hind feet that should be attended to as soon as it shows up, and that is his tendency to rock over or out, on one or both of his hind feet and ankles. To guard against this, shorten his toes as much as possible, square them slightly towards the inside of the center of the point of the frog and lower the inside of the foot so that the colt or horse will stand slightly toed out, and—looking at him from behind—the ankle and outside wall of the foot will be in line. If you will grow straighter hind feet and ankles, you will have fewer cross-firing pacers and scalping, speedy-cutting trotters.

If you discover when the colt has reached the age of three years that he has a crooked hind ankle do not attempt to straighten it by means of a shoe weighted or "built up" on the outside to force the ankle into an upright position. If you attempt this you are flirting with disaster, for the ligaments, muscles and joints are set in that position and forcing them out of it will cause lameness and unnecessary suffering to the horse. If the horse's hind ankle and foot are set crooked, shoe him so that he lands level, no matter how it looks,

as long as he goes sound; and the old shoe will tell you by the way it is worn whether he is landing level or not.

One of the best trotters I ever saw perform had a very crooked hind ankle, and the trainer that raced him with success "shod him crooked," as he expressed it. After he fell into other hands an attempt was made to straighten him up and he broke down in that ankle the next time he was worked out.

A little study of the colt's feet and legs, a little careful, intelligent treatment of them before he is shod, or before he is old enough to be shod, will save you many hours of worry and anxiety and much money.

Some of my many readers will say: "That entails a lot of time and trouble." It certainly does if you wish to look at it in that light; but to the real enthusiast, and to the man who is raising trotters and pacers for the market, it is a genuine pleasure to "fuss" with them, knowing that he is correcting the faults that they unwittingly—like little children—bring upon themselves, and is thereby aiding them to become useful if not famous race horses.

There is much that can be done with the colt before he is shod that will benefit him, his owner and his trainer. A pretty good idea of what he will need in the matter of shoes, weights, etc., can be obtained by driving him barefoot a few times, being careful, of course, that his feet are properly rounded and leveled and his quarters protected with nice-fitting bell

quarter-boots; for oftentimes a single blow on the front coronets or quarters will cause a colt to go sideways or hitch and hobble along for weeks through fear of another blow in the same place.

My observations lead me to believe that the youngsters that get their first lessons without shoes, properly booted and bitted and on straightaway tracks, make speed more satisfactorily and become better gaited than colts that are worked around the turns or on small, oval tracks. Many a valuable colt has been ruined by driving him at his top speed on a small circular track, and many more have met the same fate when the owner, groom or trainer would snap a long rope into the colt's halter, and with this long lead in one hand and a whip in the other, "ring" him—make him go in a small circle—every time he was brought out for exercise or inspection.

Traveling slow or fast in a small circle causes the colt to shorten up his stride in the front foot, that is on the inside—usually the left one—and throw the hind foot on the same side in between his front feet. He is liable to form the habit of carrying his head sideways—or in one direction—and his hind parts in another. So that when you get ready to hitch him it may be necessary to have a gaiting pole on one end of him and a head stick on the other to make him go straight in the shafts.

This is not horseshoeing, but it is the cause of many defects in gait that the horseshoer

is called upon to remedy, and he grows gray and irritable while he is doing it.

CHAPTER II.

The First Set of Shoes.

The first set of shoes the trotting colt wears should be absolutely plain in front with the edges and heels well beveled off. The hind shoes can be smooth, plain shoes also—no calks of any kind—but if a colt has a strong, resolute way of going and goes wide behind, a very light swedge shoe can be used to good advantage, as the slight hold he will get with it will have a tendency to pull him together —give him confidence—and also, he will not tire so quickly, for it is in the hind legs—the propelling power—where the horse tires first.

The weight of shoes is left entirely to your own judgment; if he goes high and round in front and just "pats" the ground, shoe him light, and after squaring the toe of the shoe slightly, bevel it off a little so as to reduce the friction or resistance on the point where the break-over comes, to a minimum. By "light" I mean a shoe weighing from four to six ounces; and in preparing the foot do not dress it too close; leave him wall sufficient to take off the sting of the blow when the foot hits the ground. It is much better to do this than to cut the foot close and then use a leather or fibre pad to make up the deficiency in natural horn.

The angle of a normal foot in front is about 48 degrees by a standard foot adjuster, but

without the foot adjuster, a foot can be placed at a proper angle with the leg by standing off a few feet from his shoulder and noting the slant of the pasterns and the general makeup of his leg and foot. Do not depend too much on the foot adjuster; it is a good thing in a good, careful man's hands, but it has been abused by incompetents or "don't care" shoers. The best foot leveler in use today is the trained mechanical eye, with a common-sense indicator behind it.

If the colt's action in front is low, and he stubs his toes, and is lacking in knee action, put on a heavy bar-shoe made of half-round iron or steel and have the nail holes well countersunk, so there will be no projections of any kind for he is liable to scalp or speedy cut, or both. A very good plan, where considerable weight is necessary to make a colt "break loose" and go to trotting, is to use a rubber pad and a half-round tip squared at the toe. A colt can carry more weight in rubber with less effort than he can in metal and there is a rebound to it that helps him to a full, round revolution. When the object for which the weight is put on is attained, it should be taken off. In some cases it is necessary to reduce weight carefully and gradually, but this does not always apply to colt trotters, as once the youngster discovers he can trot—finds his gait, so to speak—taking off a good portion of the weight at one time will not bother him. If he does miss it, and shows you that he misses it by mixing and shuffling when he starts out, a heavier quarter-boot or a light toe-weight put

on when you are about to step him up, will square him away.

I know a three-year-old filly that is very liable to be a factor in the big events for trotters of her age this year (1916) that last season carried 26 ounces on each front foot for just two weeks. At the end of that time she was a beautifully gaited trotter, and the weight was reduced to less than ten ounces, but she never missed it. She had found a place to put her feet; had been taught by the weight that she could trot; she has trot in her head and in her system now, and we will probably see her racing this season in a six-ounce front shoe.

If the colt's hind toes are of the full, round pattern, shoe him with a round-toed shoe; but if his toes are of the narrow, pointed variety, make the toe of the shoe square, and in order to get it square do not sacrifice the toe of the foot, which no doubt is short enough. If this is the case, set the shoe flush with the toe and if the corners of the square of the shoe project on each side of the toe a little it will do no harm. The reason I advocate a square-toed shoe on a hind foot of this kind is that a colt with a sharp, pointed toe is very liable to knuckle over. Knuckling has often been attributed to long toes and weak ankles, but I have found that in most cases it was caused by the foot and ankle rocking sideways when breaking over, the horse's leg being pivoted on the point of this narrow toe. A shoe squared from two to three inches across the toe gives a horse a good base to break over

on and usually prevents knuckling, which, happening when a horse is going fast, is liable to cause a fracture of the pastern bones or "break him in two" across the back.

If your prospective race horse is a pacer, shoe him with a light, swedged shoe in front, fitting the heels snug, especially the inside heel, and bevel it off well so that it really looks like a part of the foot. This is a precaution against his hitting his hocks in passing, or grabbing the shoe with the opposite hind foot—cross-firing.

In shoeing him behind lower the foot a trifle on the inside and use a half-swedged shoe, swedged on the outside, half-round or plain on the inside. Set the shoe full on the outside, leaving a trail of half an inch turned slightly out, and fit the inside close and short.

A very good way to shoe a young pacer is to put on about five ounces in front and four ounces behind. As he improves and makes speed—and his improvement is liable to be more rapid and pronounced than your colt trotter—it may become necessary to add a little toe-weight or a pad, or a little heavier shoe in front to steady him; and it may also be found expedient to reduce slightly the weight of his hind shoes; but do not make any radical change in dressing his feet. A colt's shoes should be removed every ten days or two weeks, and his feet dressed and straightened up a little if he is in active training. If, however, it is found necessary to cut his feet down materially and change their

angle, it is not a safe proposition to give the colt any fast work for several days, or until the joints and ligaments have become adjusted to the new order of things. I have seen a colt's feet cut down one day, seen him get a stiff workout the next, and the following morning felt sorry for him and his trainer when he showed two beautiful, bowed tendons—the result of ignorance and misapplied industry.

There is a vast difference in feet, and this should always be considered by the colt shoer and the trainer of colts. The wall of the white foot is finer, thinner and weaker than the dark foot and wall. The color of the foot is controlled by the color of the hair and skin covering the coronary band. A white streak or a number of them in the wall of a dark foot is caused by white hairs or a patch of white on the coronary band. These white streaks do not necessarily denote weakness, or presage foot trouble out of the ordinary, as some people think; at least I have never discovered that they did any particular damage.

Particular care should be exercised in the treatment of the foot with a thin, delicate wall. A small nail should always be used, and while it is necessary to use the coarse rasp on the bottom of the foot, it should never be used in finishing off the clinches. A fine, flat file will do the work much smoother and without disfiguring the wall of the foot or destroying its enamel to any great extent.

If the colt's foot is low at the heels and the wall is thin and weak back there, the proper

shoe is the bar-shoe. The frog in a foot of that kind is usually very prominent and if the colt happens to be one of those big-gaited fellows that hits the earth a thousand-pound blow at every stride, the frog should be protected with a bar, for there is always danger of a foot of that kind spreading sufficiently under pressure to cause acute pain. This is more prevalent, however, among thoroughbreds than trotters and pacers, as the texture of the wall of the thoroughbred's foot is finer than that of the ordinary harness horse. If the wall of your colt's foot is of this character, and after being shod a few days it begins to creep or expand over the edges of the shoe, which we will presume is fitted flush, it is a good idea to draw a clip up on each side of the shoe back pretty well towards the heel, and every time the shoe is removed draw the bar a little if it is thought that the heels of the foot are in the least bit cramped. There is very little danger, however, of a foot of this kind becoming contracted.

Much has been said and written about cutting away the bars—the continuation of the wall that runs down on each side of the frog—but there is a difference in bars and the position they occupy that should always be taken into consideration. In the low-heeled, weak-quartered foot I have just been discussing, the bar, a hard, unyielding strip of horn, runs down along the side of the frog and if it is not cut back or defined, it spreads itself over on the thin, yielding sole back in the angle between the wall and the frog, and the slightest pres-

sure on it causes it to become imbedded in the sole; and if it does not cause actual lameness, it will make a colt shorten up in his stride; and if the bar is not defined, cut away at once, relieving the pressure on the thin, elastic sole, a bruised and discolored condition of that part of the foot will be apparent in a short time, a condition that has often been mistaken for "soft corns." If you find that an overgrown bar is causing lameness or injury cut it out. If a frog is ragged and diseased cut it, trim it up and then protect it with a pad. If the sole of a horse's foot is thick and unyielding and you want to expand the foot, cut the sole down thin and open up the heels until there is some elasticity there.

I don't believe in promiscuously dissecting a horse's foot, but when you can relieve suffering and better a horse's condition by doing so, don't hesitate to do it; only be sure that your diagnosis of the trouble is correct.

CHAPTER III.

Sore Feet and Sour Dispositions.

The two great factors of balance are good, sound feet, and a good, willing-to-try disposition. A horse that is suffering the slightest pain in his feet cannot give you his best effort; and if the pain continues, no matter how game he is, he will sour on his work and get so he despises a race track. There are many reasons for a horse getting track-sick and this is one of the best of them and the most prevalent. Some families of horses are predisposed to

contracted feet, others to high heels and straight pasterns, and still others to low heels and long, sloping pasterns. The foot that is most liable to contraction is the high-heeled foot with the dark, heavy wall. There is no good reason why it should be permitted to narrow up and cause the horse to go stiff and sore when he starts out, except that his feet look so good and strong to the uninitiated that they will accept almost any other excuse for his crippled condition before they are forced to the conviction that the trouble really is in his feet. Touching on this subject some years ago in The Horse World, I said:

"There is many a horse suffering night and day, 24 hours out of the 24, and the owner, driver, groom and shoer do not know it. It requires but a small amount of neglect to cause a horse's heels to begin to contract; it does not take but a slight contraction of the heels to interfere with the articulation of the lateral cartilages, thereby creating a slight inflammation that poulticing and soaking relieves temporarily; but the cause of the irritation is still there, and if the wall of the foot is thick and heavy, that makes matters worse; for a wall of that nature is unyielding. And so matters go on from a seemingly trivial soreness to a shortened stride, and finally comes the acute lameness; the sunken eyes tell all of the misery and suffering that a little enlightenment, a little study of the horse's foot and leg, would have prevented.

"What do I mean by a little study of the horse's foot and leg? I'll tell you what I mean

in a few plain words. When you see a horse with a big, strong shin and pastern bone, and a small, narrow foot with the cartilages forced up above the edge of the wall, ordinary intelligence will tell you that the bones of the foot and the bones of the leg must correspond as to size, and if the large bones are encased in a small, contracted wall of horn, you should know at a glance why that horse is lame, or at least goes 'peggy.'

"Often a slight injury to a colt's foot will cause him to put all of his weight on the other one, thereby permitting the injured one to contract slightly, and perhaps through a little neglect it is allowed to contract more and more. The growth is in a measure retarded, and when the colt reaches maturity he is possessed of one foot suited for a two-year-old and another that will answer all right for the purpose for which it was intended; but it would work much smoother if it had a mate.

"I know of no greater handicap to a race horse than a brace of misfits hung on the end of its legs. Of course, we will have lame horses, and lame men, and lame excuses until the end of time, but a lot of this foot and leg trouble can be avoided if we will take action as soon as the first symptoms appear. Proper shoeing, springs, pads, and a course of blistering will often ward off what may develop into something serious if preventive methods are not adopted."

If the colt shows signs of soreness in his feet, don't wait until he gets to going sideways,

or you will be obliged to add five or six ounces extra weight to each front foot to make him square away, and if his temper begins to show signs of breaking loose at any moment, get after his feet; and if they are dry and hot, poultice them with flaxseed poultices and, to hurry the work along, tub him out twice a day for a couple of days in warm rain water with a double handful of bran in it. When the fever in his feet is allayed, open up the heels well, thin the soles of the feet as much as possible, define the bars, and cut a deep groove with the end of the shoeing knife along each side of the frog; loosen everything up so you can take the foot between the knees and with a hand on each side of it spread it perceptibly with the hands. Having prepared the foot in this manner, put in a V-shaped spring, stiff enough to force the heels open about three-eighths of an inch and hold them there.

Many trainers object to a horse wearing a spring when he is in training or while he is racing, and their fears or objections are not without good reasons, for if a spring is not fastened at the toe of the foot and the horse should happen to pull or throw off a shoe while going a fast mile, there is a chance that it would come part way out and by his stepping on it just right, one of the ends would be forced into the frog or through the sole of the foot. I never knew of but one instance of this kind, but it proved a serious affair. A spring, however, can be put in in such a manner as to make it absolutely safe for a horse to be worked or raced with it in. After the

heels of the spring have been properly fastened by imbedding them in the horn at the heels of the foot, wrap a narrow piece of leather around the front loop and drive a horseshoe nail—that you have previously flattened the head on—up through it and clinch, thereby fastening it to the toe of the foot, and if the shoe does come off it will stay in place until you get back to the stable. After the spring has been in the foot a few minutes put the shoe on, fitting it full and flush with the wall and punching the nail holes well forward so that the heels will be permitted to expand, not alone from the force of the spring, but through the additional force of the weight of the horse, especially when he is in motion. A horse shod in this manner can be worked and raced, and by removing the shoes and pads every few days and opening the springs a trifle the horse will get better gaited and better tempered as the pain caused by the pressure of the walls on the sensitive laminae disappears and the lateral cartilages gradually drop back where they belong.

Contracted feet and corns go together. There are corns—so-called—in feet that are not contracted, but the real troublesome, deep-seated corn is the one that is to be found in the heel or heels of the contracted foot. The corn starts at the top of the wall, and when you hear a man tell of "cutting a corn out" of a contracted foot, just imagine a hole bored from the bottom of the horse's foot up inside the wall to the place of its origin near the coronet. When the walls of the foot contract,

even the very slightest, the sensitive laminae between the wall and the wings of the coffin bone (os pedis) is bruised; little clots of blood form and as the wall grows down and the old particles of horn and sole flake off or are pared off by the shoer, the discolorations become apparent. Oftentimes when the contracted condition of the heels is not relieved and the pressure is so great that severe lameness results, pus forms and eats its way to the weakest spot, the coronary band, unless it is released in time by an opening at the bottom.

The cause of the deep-seated corn is brought about by the expansion of the heels as above described. The discolorations may remain, or they may come and go; but as long as the heels are wide enough to permit a free articulation of the bones of the foot you will have no trouble with the corns.

Where there is much soreness, or where pus has formed, it is well to dress out the diseased parts in the angle of the foot and dress with tincture of iodine or gum camphor. Good results are obtained also by putting iodine crystals in the cavity formed by the corn and exploding them with a few drops of spirits of turpentine. The iodine vapor penetrates through the tiny fissures and gives almost instant relief.

I have dwelt on the subject of contracted feet for the reason that I want to impress upon the reader the importance of keeping the foot expanded and the frog and walls in a healthy, elastic condition. Usually when a horse is in

what we are pleased to term, "perfect physical condition," his condition is reflected in the condition of his feet because, as a rule, they are free from fever or trouble of any importance and it is a well-known fact that when the horse's system is run down and he looks "ragged" and "off" his feet show it as much as his body.

It is well, therefore, if your colt, that has been going good-gaited and free, begins to shorten up in his stride, or singlefoots and tries to go sideways, to have his feet examined carefully before you begin to put on more weight or make any change in his shoeing in order to get him in balance again. If his foot is hot and the walls show signs of dropping in just under the hair back at the heels, get busy, and relieve the pressure at once. Or, if the soreness is caused by concussion, lower the heels a little and put on a light rubber pad. If you discover that it is tendon trouble, you know what to do; but before putting on extra weight find out why you are putting it on. If the trouble is caused by soreness and you remove the cause, you will not have to change the weight of his front shoes. I said lower the heels when a rubber pad is put on, because a horse can travel with a low heel while wearing a pad. It is much better that his heels should be lowered, as with the ordinary heels and the customary pads, his heels would be too high.

When the colt you supposed was a trotter shows an inclination to pace with his trotting shoes on, don't get alarmed; there's very little difference between a trotting shoe and a pac-

ing shoe—it's mostly in the name. You may put on a little more weight, thinking that will make him trot only to find that it makes him steadier and a little better-gaited pacer. The usual procedure is to let him pace, develop his speed at the latteral gait, and when he has matured convert him back to the diagonal gait. A colt develops speed at the pace much faster than he does trotting, and if he has to have considerable weight to change him over to the trot, the best time to put it on is when he has matured, and his muscles are in a better condition to carry it.

If, however, you want him to trot all of the time and you are not in a hurry, it is a good plan to let his front toes grow out pretty well —to say, four inches—and do not increase the weight of his front shoes but reduce the weight of his hind shoes. If practicable, let him go barefoot behind for awhile and lower the angle of his front foot to about 47 degrees. When you want to step him up a little, slip on a heavy quarter-boot, or a toe-weight, or both, and let him step to where he can go, and go square, being careful not to ask him for more than he has got. If he insists on changing, or trying to change over to the pace, put on a heavy rubber pad cut through at the heels to accommodate a full-length swedged shoe, set full at the toe, the combined weight of shoe and pad to be anywhere from fourteen to twenty-four ounces. If he has to carry the heavier weight he will look fine—like a champion—going at a certain clip, but I do not believe he would look good to you at the end of

the fifth heat on a heavy track. Then, perhaps, a little "For Sale" ad might help you out, or you might decide to let him pace.

Quite often the colt will show you a sample of every gait going, from the Indian's "sundance" to the "Pittsburg Glide," and some morning when your disposition is almost a total loss you will polish up his ribs with something he will feel and he will begin to pace, not very good or very far, but he will pace. Take him over to the shop and put on about four ounces in front and eight ounces behind; hook him to the lightest cart you have and when you come to a little piece of down-hill road let him pace. When going up-hill, let him walk. After he gets pace into his head, which he will in a few days, shoe him with five or six-ounce shoes all around; he will never need much weight on any of his feet after he gets his gait established. One of the greatest pacers the world ever knew wore five and one-half ounces in front and five ounces behind.

Any pacer is liable to cross-fire, but a young, green pacer is more liable to do it than an aged horse. There are various causes for it. A horse may not be rapid enough in front. His mouth may be sore, causing him to get his head, and, consequently, his front parts out of line and, if he wears hobbles, they may pull him across; and there are numberless other reasons. In extreme cases I would recommend the extension shoe behind, that is, a shoe with a wide outside web, the forward corner of the extension coming out three-eighths or one-half inch outside of the toe, a sharp calk being

brazed down the outside of this web to the point of the extension, and at the outside heel a stiff calk is also brazed onto a trail about three-quarters of an inch long, which is turned slightly outward. The inside web is made plain, or better still, is made half-round by drawing it through a half-round swedge. The nail holes are well countersunk and the heel of the inside web should not extend back of the heel of the foot. The foot should be lowered also on the inside, the object being to keep the foot toed out, for a hind foot usually goes in the direction in which it is headed when it leaves the ground.

Many pacers will cross-fire and pull a front shoe while jogging along at a three-minute gait that will not touch a hair when going at speed. It is a very disagreeable experience to have a shoe pulled every day or two; also it is a very bad thing for the foot. Small, close-fitting quarter-boots are generally used; some use just a heel strap to protect the inside heel of the front shoe, but a confirmed cross-firer will even beat these, and snatch the shoe off just the same.

Many trainers do not like a close-fitting quarter-boot or heel strap on a colt as it is liable to pinch the heel, especially where it is necessary to buckle it extremely tight to keep it in place. A light bell-boot is preferred, but a bell-boot does not afford much protection against cross-firing, and I am going to suggest that on colts that are careless and are liable to grab a shoe any time, and aged horses that are continually grabbing a front shoe, you use

what is commonly known as the heel-cap shoe, illustrated on another page. It is a very easy shoe to make. After the shoe is fitted in the regular manner, the shoer heats the heels and turning the ground surface of the shoe down on the edge of the anvil draws the heels out flat and very thin, and forms them like a half-thimble over the point of the horn, leaving them about a half-inch long. The shoe, of course, must be exactly the length of the foot so that these thimbles, or caps, will fit closely up along the horn at the extreme heel of the foot, where they are tapped down snug so that it will be impossible for a horse to grab it off. This style of shoe is especially good when the roads are muddy and you do not care to put on quarter-boots. It can be made plain, or in bar or calk shoes.

CHAPTER IV.

Knee-Hitting, Scalping, Etc.

Gallons of ink have been splashed on the subject of knee-hitting, scalping, shin-hitting, and hitting on up to the hocks. Almost everyone has heard of the horse that "wore everything but ear-boots." The bad-gaited trotters are not as numerous now as they were years ago. We are breeding them better and more attention is given to their early education, shoeing, bitting, etc., than in former years.

Always keep in mind what has been said about soreness in front—both tendon and foot trouble—and if the horse has been going clean and suddenly develops into a scalper or speedy-

cutter, or forms any other disagreeable habit in his way of going look for the cause of the trouble first in the front legs or feet. I have known trotters that would scalp going slow, speedy-cut going a three-minute clip, bark their hind shins and hit their knees going a 2.30 gait, and hit their hocks and knees going at their highest flight of speed. Going slow they did not go high enough in front to hit their knees, neither would they hit the knees when scalping, but as soon as they got to the point where they hit the hind shins, the front feet began to find the knees. What's the answer? Going slow he was a line trotter; as his speed increased his gait behind opened out but not sufficiently to let his hind shins and his front feet pass in the air without brushing; when he got to his top flight the outside of the upturned front foot brushed the hock on the inside of the leg on the same side and this threw the front foot slightly out of line, giving it a slight inward wobble and in passing forward the opposite knee is hit or brushed. I have seen a horse come in from a fast heat so lame from a blow received away around on the back part of the knee that he was walking on three legs; and he got it in the manner I have described going around the turn. The revolution of his front foot was interfered with and went forward on a wobble far out of line. Nothing else could be expected, and the blow under the knee of the opposite leg was the logical result.

All knee-hitting trotters do not speedy-cut, or hit their hocks, but all trotters that do speedy-

cut or hit their hocks are liable to bump a knee any time. This is what we call the "big-gaited" horse. Shoe him with a plain, flat shoe, knocked down very thin on the outside—beveled—and fit the outside very close. In preparing the foot lower it on the outside. Do not use any heavier shoe than is absolutely necessary and don't use a toe-weight at all. If you have to use weight put it in the shoe. Behind, shoe him as light as possible with a swedged shoe, squared at the toe and with small heel calks. If, in your judgment, he is not quite rapid enough in front, use a center-rim shoe, or an inverted-rim shoe, which is practically the same thing and much easier to make, being made by turning a piece of rim steel wrong side out. Make it into a bar-shoe, and rivet on a leather pad. The principal reason I recommend a pad in this instance is to prevent him from picking up too much dirt, for if his foot happens to be of the "cup" variety he is liable to pick it up in large quantities and throw it up against his body with such force that it will irritate him, causing him to break; also if the driver is in a low sulky or cart he is destined to get the benefit of the back-fire from the front feet. That is the reason I have always advocated the use of a leather pad with this inverted rim shoe. It is really a good, practical, common-sense shoe for a horse that scalps or hit his shins; it gives him a firm hold of the track; he can break over quickly and easily, and its edges are very thin. A very important item: In making it, make the bar flat by knocking down

the rim. The best results are obtained with this shoe on a hard, smooth track.

The worst knee-hitter is the horse that stands perfectly straight on his feet and ankles, and has straight pasterns and high heels. To stand in front of him and size him up, you would not pick him for a knee-knocker. When he is going slow his front action is of the "stilty" order, and he occasionally brushes his front shins. Step him up, and he picks his foot up with a snap; the foot swings outwardly and when the reverse motion comes, he swings it in a winding curve and bumps the opposite knee with the forward quarter of the foot. Just imagine a horse going a mile in 2.10 and rapping his knees in this manner every stride. It is more dangerous, I have always contended, to drive a hard-hitting knee-knocker than a hobbled pacer, for he is liable to fall any time and there is nothing that will make a horse leg-weary so quickly as hitting his knees. I might add also, that it has the same effect on the owner.

If a horse is carrying a 12-ounce shoe, make it into a heel-weight shoe, or, more properly, a bar-shoe with all of the weight in the back part of the shoe and bar. Make the front part of it as light as possible and round it off at the toe and bevel off both sides back to the last nail hole. Lower the heels of the foot all they will stand and leave the toe possibly three and seven-eighths inches. The object is to make him go straight over the opposite knee instead of against it. Much depends on the driver, though. A horse of this kind will

hit his knees anyway with a careless driver, for, going at a certain clip, he will go just high enough to get his knee; but if he has a watchful "jock" who will get him ready to step, going quite slow and then pick him up and step him right upon his toes without any preliminaries, there will be no intermediate work and no intermediate blows. I trust you get my meaning.

The next horse to consider is the one that stands with the inside heels low and curved under and his toes pointing out like an Alabama coon standing before the bar of justice. Pick up the front foot and look down over it and you will discover that two-thirds of the foot is on the outside of the center of the frog. To get a good idea of this lay a rule edgeways, straight down the center of the frog, and note the difference in the amount of foot outside to the amount inside. Also, the outside will be highest and the inside quarter will not only be lower, but from a half an inch to an inch shorter than the outside lateral quarter. This is one of the colts I told you about in the beginning that started all of this trouble when he first got upon his feet. He will probably go in a ten-ounce shoe. All right! Lower the outside of the foot all you can from the heel to the spot indicated by the point of the frog—that is the center of the foot; take off the edge of the outside forward quarter with the rasp in an effort to turn the toe in. Fit the shoe flush with the inside wall, and let the inside heel of the shoe run back straight where the quarter is not, but should be. Fit the outside

close and bevel it off well clear back, fitting the heel just the length of the foot. Braze a flat calk on the inside heel, nothing on the outside heel; braze a sharp calk about two inches long along the inside toe of the shoe beginning inside of the center of the toe and extending to about the second nail hole. Draw a good, stiff clip down on the outside back at the heel; rivet a leather pad on the shoe and put in a good spring. The outside clip will hold that quarter where it is and all of the pressure of the spring will be brought to bear on the inside quarter, and will force it out so that in a month or two the horse will stand square on his front feet—his feet will be under the center of the column of bones instead of on one side of it. In taking down the outside of the foot you may think you are tipping him out, but if you will measure with a compass from the coronary band to the floor, back about two and a half inches from the center of the toe, you will discover that you have only dressed the foot level. If the horse is not in training, blister the coronary bands, but if he is in training use a strong liniment or iodine paint on the coronets to stimulate the growth of the horn; but do not give the horse any stiff work for a week after making a radical change like this for reasons I have stated in a previous chapter.

Remove the shoes every week or ten days, open the spring a little, spread the shoe a little, lower the foot a trifle on the outside and repack the foot with medicated oakum and some preparation that will supply the necessary

lubricants and keep down any inflammation that might be caused by the work of the spring. You understand that you can force a foot apart with a spring sufficiently to create inflammation if the foot is not soft and pliable when you put the spring in. The best time to do this kind of work is in the winter when you are not in the heat and turmoil of a campaign. Begin on feet of this kind soon as you are in winter quarters, and the horse's system has been cooled out. Then, with the aid of springs, pads and blisters, you will be able to grow practically a new foot on your racer before you begin training him again in the spring.

Some people seem to think that a spring should only be used in a front foot, but this is a mistaken idea. There are plenty of hind feet that are greatly benefitted by its use.

CHAPTER V.

Pads, Their Benefits and Abuses.

The one grand thing about this harness horse industry is the large amount of unadulterated sentiment that is in it, the genuine love for man's companion, servant and best friend among the dumb animals. Occasionally we will overhear some old antidiluvian from Hemlock Woods say, "those fellers ought 'ter be arrested for drivin' them thar horses so fast; it's cruel." And perhaps the old geezer has a team of half-starved, foot-sore pelters hitched outside the grounds in the hot sun to save a quarter's admission to a hitch stable, where they would be comfortable. It is all nonsense,

this cruelty talk; the horses like to race, they are bred to race, and trained and prepared to race, and show as plainly by their actions as man can in words that they are only too willing to do man's bidding. I hear a voice saying, "I can tell you of one that didn't like the game."

Sure; and I can point to a man occasionally who doesn't like to work for a living. There is something lacking in his make up. It is the same with the horse you refer to; he wasn't all there.

"You cannot imagine how it hurts me to drive that filly in her present condition. I wish Mr. Blank would order her sent home," said a great trainer and race driver to me a few years ago, talking about a great three-year-old that was quite lame in front, but would forget her trouble and race as far as she could when turned for the word; and that remark reflects the feeling of nearly all harness-horse drivers. If there is an exception his name has been kept a secret.

This little digression leads to the subject of pads and rubber horseshoes. Two of the most essential and humane articles that have ever been invented for the protection of the horse's feet are rubber pads and the rubber horseshoes. Some years ago we used to make a combination pad of felt and split leather—the felt being cemented on to the leather and placed next to the foot. It makes a splendid pad to put on a sore or lame horse just for a race or a stiff workout, especially if the track is hard, but its

wearing qualities are not good. The ordinary leather pad is a good thing, especially when used with a bar-shoe. And often when a shoe is worn until it is a couple of ounces too light and the trainer doesn't want to shoe the horse new until after the race or workout, a heavy leather pad with proper packing underneath will supply the deficiency in weight, and at a trifling expense. The rubber pads, heavy, medium and light racing are a boon to the horse and his owner. If the horse is sore in his feet they will give him immediate relief. If he is lacking in knee or hock action you can help him greatly with pads. If you want him to carry a lot of weight you can put it on in the shape of a rubber pad, and he will carry it much easier than he will half the amount in steel or iron. The rubber pad is a protection against bruises, punctures and concussions. When the roads are rough and hard in the spring or late fall the rubber horseshoe with the steel frame is one of the best shoes that can be used. It gives the same protection as the rubber pad and has the added advantage of greater wear for road use.

The greatest abuse, or neglect, that can be given a horse's foot, and this applies to all classes of horses, is to put a pad on, packed with oakum and some good preparation and leave it on for six weeks or two and sometimes three months. No matter how well a foot is packed sand and sediment are liable to get in under the pad and form into hard lumps. And when the pad is finally removed the mass of oakum, sand and gravel all molded into one

hard chunk is found imbedded between the pad and the frog and sole of the foot. The foot is dry and the frog is hard for the reason that instead of imparting moisture, the packing had absorbed the moisture from the foot that had been given to it in the first two or three weeks that it was there and had also collected toll by taking out more than was put in. Why does this condition exist? The pads were left on too long and the horse was out on all kinds of roads, in all kinds of weather; the muddy water carried the foreign substance in under the pads and left it there. Had the pads been removed and the feet repacked at the proper time this undesired condition would not have prevailed. The foregoing remarks are applicable more to the road or general purpose horse than to the horse in training. But the horse in training that wears pads sometimes has his troubles; in fact, quite often he is subject to neglect because he is "going fine," and the driver does not want his feet touched as long as the shoes will stay in place.

That is a very commendable trait in a trainer —to let well enough alone—but when he has those pads removed he will find the bottom of his horse's foot all mush; the insensitive covering of frog can all be scraped off with the back of the shoeing knife; the sole and bars are like cheese and the whole mess smells like a dissected livery stable. Well, what about it? This colt you understand is in training. His work is chiefly on the track, cinder path or a smooth road or pavement. His feet are washed every day and the boy has squeezed water

from a sponge down under the pad every time he washed them, and perhaps he has forced a little oil or something down into the oakum so that the foot has been saturated for weeks and has become too soft. You know a foot can be too soft and mushy as well as not soft enough. Had the pads been removed every ten days or two weeks, the foot dressed a little and fresh packing put in, the colt would have been treated in a much more intelligent manner.

And then there is the case of the fellow who has pads put on and maybe in a few days the horse gets sick and is thrown out of training, or the man goes away on business or pleasure and forgets all about the matter, and the pads stay on for months, when, as a matter of common sense, they should have been taken off at the outset and left off all of the time the horse was not in use. Now, the owner did not mean to do the good horse harm; he wouldn't knowingly do him the slightest injury or injustice any more than he would one of his own children; he simply forgot, but that does not excuse him; he should never forget his horse.

If you are asked to race your horse on a track that is muddy or sloppy and your horse has rubber pads on take them off. If he is wearing full leather pads—that is, all over the foot—cut out the center and remove all of the packing. If you have been racing on a hard, smooth track and you come to a track that is loose and "cuppy," put on a sharp, swedge-shoe with the pads, or braze on low, sharp calks, and if the pad is of leather cut out in the

center the same as for mud. A smooth, flat shoe and a rubber pad will possibly do on a sand track, but a shoe of that kind with a plain leather pad makes the going rather tiresome. Of course the propelling power is behind, but with that kind of foot adornment in front a horse will sprawl, slip forward when he lands, and the effort to get hold of the track will distress him. And if the sand is dry and fine and the crevices in the middle and on each side of the frog are not properly packed your racer may be carrying three or four ounces of sand under each pad before the race is over, and you'll say "he got pretty tired and labored badly in the last heat; I guess he didn't like the track." And if the pads are removed the following day you will understand why he labored when the shoer empties the "sand boxes."

In preparing the packing—oakum or antiseptic cotton—for the feet, it should be twisted into rolls about the size of your finger. And after whatever preparation you are using has been applied to the frog and bottom of the foot, the packing should be pressed down into the crevices of the frog and between the frog and heels, and the middle of the foot should be filled with the packing, but it should not be rolled up so tight, or wadded in as hard as the rolls you have forced down around the frog, in such a manner that sand, gravel, etc., will be excluded. If the foot is to have a spring in it, put the softening preparation in first—after preparing the foot—then a portion of the packing, then the spring and next finish packing around the frog and heel and on top of the

spring. If it is suspected that the horse is troubled with navicular disease do not pack the crevice of the frog with a hard roll of packing; just wedge in a little loose oakum or cotton, and do not put in any packing on top of the frog if it is going to cause pressure on it. The navicular joint lies directly above the center or cleft of the frog and any pressure that may come at that point will cause lameness; that is, the horse will go out lame, and gradually get better, "warm out of it," as they say, but he will be sore there again as soon as he gets cooled out. If you think the horse flinches a little when he first goes out, rake out the packing that is between the frog and pad or bar of the shoe with a foot hook, and see if he does not go better at once.

It is advisable when a pad is used, to draw down a clip at the toe of the shoe, and another back near the heel nail-hole on the outside—usually between the two last holes. If it is not convenient to put on a toe clip, put it on at the outside forward quarter. The clip takes much of the strain off from the nails and prevents the shoe from being driven back or out of place. If the shoe is a square-toed shoe, it is well to draw down a clip at each corner of the square, and dispense with the clip at the outside heel.

If the colt is a line trotter with medium action in front and scalps or touches his hind shins, shoe him with a five or six-ounce, three-quarter flat tip in front. By "three-quarter" I mean a tip that comes back three-quarters of the way on the foot. In preparing the foot do not touch the heels; set the tip down into the

wall by dressing away enough of the bottom of it to permit of the tip being put on so that it will be level with the back part of the foot that has not been touched. Square it at the toe and bevel off slightly, and also bevel off the edges and be sure that the nail-heads are down smooth with the surface of the tip. On the hind feet, which should be dressed perfectly level, use a plain, flat, square-toed shoe with a small block heel-calk, leaving the heels of the shoe about the same length. If the outside heel is a trifle the longest it will do no harm. Have the shoe weigh not over four ounces, three ounces would be better. Where the colt is a "natural born trotter," goes in a line, and is on a trot all of the time, and balances in six ounces in front, I would advise the use of hard aluminum for the front tip, because you can make a four-ounce tip wide and thin, that will afford more protection than the narrow steel tip, and you can use in connection with this tip a two or three-ounce toe-weight if necessary; put on the lightest hind shin boot with speedy-cut attachment you can buy and throw away the scalper, for the scalping boots and the elbow boots are the meanest boots a horse can wear, although there is no denying the fact that in many cases they are absolutely indispensible.

If the colt paddles with one or both of his front feet—wings out—shoe him in front with an outside swedged shoe; the inside should be left plain and beveled off from the center of the toe—where the swedge stops—back to the heel. If the inside web of the shoe is made

half-oval by drawing it through a half-oval swedge so much the better. The shoe can be made into a bar-shoe, but an open shoe will answer the purpose. The object is to make the foot swing in instead of out when it leaves the ground, and in this way straighten the action of the leg and foot and take away the waste action. The outside swedge or crease should be good and deep so that it will take hold of the ground, for the foot will swing when it lets go in the direction opposite to where it "grabbed the track." To be brief, shoeing a paddler is reversing the customary method of shoeing a chronic knee-knocker that toes out. Behind, lower the inside of the feet a little and put on a regular outside-swedged cross-firing shoe with a small, block heel-calk, leaving the outside trail about a half inch longer than the inside heel of the shoe. The shoe should be light, about four or four and a half ounces. By straightening him in front and widening him a little behind you will win the argument.

Now bring in the colt with the long, sloping pasterns in front, that stands with his feet in front of him instead of under him, and whose hind legs would make good sickles if ground a little on the front side. Maybe he cannot bump his hind toes right into the bottom of his front feet! and when you try to make him imitate a trotter he rakes his hind feet, ankles and shins, until it drives him insane and causes him to break; after awhile he strikes a trot again, but his mind, if he has any, is not on trotting; he is expecting another whack on his

hind shin; gets it in a couple of strides, tries to braid all of his legs together and—but you recognize him. He is one of the first ones you ever trained and one of the last ones you want to train again. To shoe a colt of this kind cut his front toes off as much as possible; you will not at best be able to cut them off as much as you think you can, for the laminae of that foot runs out " under the eaves." Make an open-toed bar-shoe weighing 12 or 14 ounces. Put all of the weight possible in the bar and draw the web of the shoe down to a feather edge in a three-quarter inch, half-oval swedge. Let the web of the shoe come forward so there is an open space of about two and one-half inches at the "toe" of the shoe (or where the toe is supposed to be, but in this case there is no toe); let it extend back of the heels at least one and a half inches so that the foot is brought back under the leg, so to speak. Make the bar thick and, if you wish, put in a thick wedge of sole-leather or aluminum between the heels of the foot and the shoe, riveting it onto the bar in the center and letting it run forward to the heel nail on each side; this to raise his heels higher. Round off the exposed wall from the bottom at the toe so it will be smooth and not break off and smooth off the nail-heads. Put on a plain, square-toed shoe behind and fit the heels close, just like you would plate a runner. The colt will not know what to do with his feet the first time out, but give him a little time to regain confidence and when he finds he is not going to hit at every step he will repay you by showing a

mile some day with only five or six breaks in it, and you may be able to sell him or get some public trainer to race him on shares. There is danger always that in walking or jogging he will pull off the front shoes, and I would advise the use of a heel strap or close fitting quarter-boot.

I have heard the opinion expressed that a horse that scalped or hit his shins could not or should not wear calks on his front shoes, as they would injure him. This opinion is worthy of consideration, but I cannot agree with it in all cases. I have seen a horse scalp worse on a track when the soil was rather deep and loose with a smooth shoe than he would with a rim or a three-calk shoe on his front feet. And I have known horses that were completely cured of the scalping and speedy-cutting faults by the application of shoes with low, sharp grab-calks on them. Some horses can't go a lick with a calk on the front shoe; others cannot do their best without them. A trotter that glides along in front, making two distinct impressions of his front foot on the track every time he lands, will not do well with a calked shoe on. The wide-webbed, thin, plain shoe suits him better. A calk will stop his "slide," shorten his stride, interfere with his front action, throw him completely out of balance and oftentimes make him so sore in his muscles that you will think he has been foundered.

CHAPTER VI.

Thrush, Its Cause and Treatment.

Thrush is a foul disease of the frog and is caused by neglect. It is more prevalent in the hind feet than in the front ones. Unclean stalls, yards or paddocks are chiefly responsible for its presence, and if the colt or aged horse happens to be in a poor physical condition also, the disease is aggravated. Dress the foot down all it will stand, cut away the ragged and diseased frog, and wash off with warm water and an antiseptic soap. Take a piece of hard cord about eighteen inches long and a quarter of an inch thick and tie a series of knots in it about an inch apart; a half dozen will do. Dip the cord in creolin or any strong antiseptic solution and draw it back and forth through the cleft of the frog, washing it off occasionally in hot water. When all of the foreign substance has been raked out of the cleft pack it full of boracic acid or powdered borax, wedging in a pledget of cotton to hold it in place. Repeat this every other morning for a few days and keep soap, grease and ointments away from it until the frog has "dried out" and the foul odor has disappeared. When the disease is of long standing the frog will have perished, or nearly so. When the disease is cured care should be exercised that the heels do not fall in—contract—before the new frog grows down. The foot—especially if it is a front foot—will be very tender and if left exposed on the bottom serious or at least painful injury is liable to occur should the horse step on a cobble-stone or any rough substance while exercising.

A wise precautionary measure is to put on a bar shoe and a thin aluminum pad or plate, and fill the foot full of loose oakum with borax sprinkled through it, being careful that the foot is not packed full enough to cause pressure on the tender frog. Do not allow any water or oils of any kind to get in under the pad, and remove it and repack every few days. When the frog has grown sufficiently strong and elastic to take care of itself the aluminum pad can be removed. If the heels show signs of contracting, put in a pair of springs when you put on the aluminum pad, and remove when you think the frog is sufficiently grown to keep them expanded. It is a mistaken idea that a horse suffering from thrush should be laid up or thrown out of training or turned out. If you turn a horse with a case of thrush out on dry pasture before you have given him thorough treatment for it, he will come up later in the season with feet as hard and dry as ivory, his heels contracted, and the disease more deeply seated than ever. Thrush should be treated promptly and intelligently.

CHAPTER VII.

Punctures.

If a puncture is caused by a blunt stub or an old-fashioned cut nail a portion of the sole will be forced into the sensitive part of the foot. If the injury is in the frog a piece of the frog may be forced ahead of the nail, but the chances are not so great as when the injury is in the sole, the frog being more elastic and non-resisting.

Cut out the aperture with a fine shoeing knife and remove all particles that have been forced into it; dress the wound carefully and put in a few drops of spirits of turpentine and cover with antiseptic cotton or gauze; put a pad—leather or aluminum—on the shoe and fasten the shoe on with only two or three nails, using the old nail holes in the wall so you can remove it easily every twenty-four hours to dress. In cases of puncture it is always advisable to call a qualified veterinary surgeon, as there is always danger of tetanus—lockjaw—developing.

Oftentimes a horse will pull a shoe partly off and step back on it; the nails happen to be bent in a little, and when he puts his weight on the foot the nails are driven up into the sensitive part of the foot inside the wall. He won't go far; he may fall down; he will certainly stop unless he is in a race and this seldom happens in a contest. It usually occurs when you are leading him or jogging him. Pull the shoe off as quickly as possible, examine the nails and note the direction in which they are bent, and if the clinches are on them or have been broken off, get the foot into a tub of hot water at once, and after ten minutes of soaking, to relieve the pain, open the holes made by the nails, dress with any strong antiseptic remedy you have at hand and then do up in a hot flaxseed poultice, replacing it in four hours with another one. If no complications set in the horse will be ready for work again in a couple of days, if you will see to it that no pressure is allowed on that part of the sole or foot where the injury is or was.

CHAPTER VIII.

Quarter and Toe Cracks.

Quarter cracks are largely due to the dry, brittle and contracted condition of the wall of the foot. There is not room inside the walls to allow for proper and necessary expansion when the horse's weight comes on the foot and something gives way, and naturally it comes in the weakest part of the wall—the inside quarter—although many times the outside lateral quarter is the one affected. If the crack is neglected the sensitive part of the foot—the laminae—is forced outwardly into the fissure caused by the separation of the wall, and as the two edges of the horn are constantly "sawing" while the horse is in motion, the pain caused by the constant squeezing of the protruding sensitive part can be imagined better than it can be described. Sometimes a crack will start at the top near the hair, and split about half way down. Another will begin at the bottom and split about half the distance to the hair while, in severe cases—the majority of cases—the crack will open from the shoe, to and into the coronary band.

In the first case cut away the horn on each side of the crack; cut it back well on each side, making a V-shaped groove; file with the corner of the rasp a deep groove just below its lower extremity and across it to keep it from extending lower, and fire it across the top in the coronary band, being sure you are above the extreme upper end of the fissure, so that when the new wall grows down there will not be a

slight separation of the band where the old one was. Shoe the horse with a bar-shoe, pads and springs as I have described in the chapter on contracted feet, and cut away the inside heel on the bottom, so that there will not be any pressure back of the quarter crack.

In the case where the crack starts at the bottom cut the horn away in the same manner. File the groove above and across the upper end of the crack, to keep it from splitting farther up—file this groove deep—and remove the pressure on the bottom as previously described. When the crack extends from top to bottom cut away the entire back quarter or that portion of it back of the crack; that is, cut the edges as I have described, and with the edges and smooth side of the rasp, thin all of the horn back towards the heel to the thickness of cardboard. And if the lower end of this portion is separated from the sole—looking at it from the bottom—cut it off as far up as the separation goes. Shoe in the same manner as for the other form of a crack, and after the shoe is on and the clinches finished off, push a small piece of cotton into the cavity made by taking away the horn; then run the cavity full of shoemaker's wax. Cover it with cotton while it is hot. Sew a piece of light canvas cloth around the foot, covering the entire quarter, and, if you have it convenient, put on a wide strip of surgeon's court-plaster over all. You can then go on and work or race the horse, changing the bandage on the foot as often as necessity demands, but it will do no harm if you leave it on a couple of weeks. If the horse is not in

training, you can dispense with the hot wax and bandages, and, after firing the crack across the top, apply a good blister to the coronary band. Only one foot may be troubled with a crack, but put the shoes, springs and blisters on both. "An ounce of prevention" you know, is a good thing always.

Many men will insist that nailing a split wall together, or "sewing" it up with copper wire, or holding it together by means of brass plates is the proper method to pursue, and, no doubt, all of these methods have, on certain occasions, proved satisfactory; for instance, where a quarter crack is well forward—a rare thing—or where the crack has just started, etc. But the fact remains that a separated wall cannot grow together. Before that foot can be considered sound again, a new wall must be grown, and it must come from the top, and it has been my experience that it grew down quicker, fuller, and more elastic when the old horn or "deadwood" had been removed.

The general line of treatment recommended for quarter cracks is applicable to toe cracks. The crack should be cut away on each side, fired or cut across the top so the wall will be united when it grows down; then draw a good heavy clip up out of the shoe on each side of the crack, to hold the two sections of the wall in position and keep them from continually "working." Should proud flesh or a fungus growth develop in a quarter or toe crack, you can treat it with caustic or acid, but a veterinary should be given a chance to live.

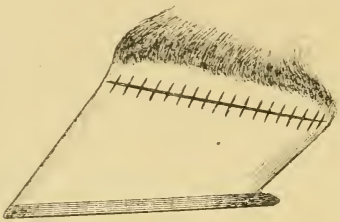
CHAPTER IX.

Hoof Bound.

When that part of the wall around and under the coronet is drawn in and the heels are narrow, the frog pinched in so tightly it can hardly be seen, the lateral cartilages forced upward and the foot is hot and dry, "they" will tell you that he is "hoof-bound" and "has been that way since he was a colt because his feet did not grow fast enough," etc., etc. It sounds silly, but still there is a lot of truth in the statement. When the colt is brought in from the pasture his feet are hard and dry (not all colts—the one we are discussing is enough). And before they are softened and allowed to expand and get some life into them, shoes are put on and he is put to work. Whether that work is drawing a sulky or a coal wagon, does not matter; his feet were "tied up" in the shoes when they were in a practically crippled condition, and as long as the shoe stays on and the man in charge does not know or care, why, the horse goes along in a stiff, jerky sort of way, stumbling occasionally, coming out in the morning stiff and sore and hollow-eyed, there will be no relief. By and by we will see him perhaps five or six or seven years of age, but with a foot the size of a two-year-old's," because "it didn't grow fast enough when he was a colt."

This is a case that requires heroic treatment. Here is a foot that needs dissecting and needs it badly. But before you begin the operation, soak the feet, poultice them, do anything that will soften them. Then pare the sole as thin

as possible, cut away the bars—there is no danger of your injuring the frog for there is none to injure; take off all the horn on the bottom and open up the heels which have curved in like



"Scoring" a Hoofbound or Contracted Wall.

an ingrowing toe nail. If the shoeing knife will not cut it take a small fine saw and saw out a chunk on each side of where the frog is supposed to be; do not get nervous if you draw a little blood.

After you have gone as far as you dare to on the bottom of the foot take it forward on your knee and with the corner of the rasp file a groove about three-quarters of an inch below the hair, and extending from heel to heel—clear around the top part of the hoof. File the groove deep—until you see a white—sometimes discolored—tissue, known as the "white zone," a soft, elastic, (in its natural state) cushion-like substance that lies between the outer wall and the sensitive laminae. Make this groove or channel large enough so you can lay a lead pencil in it; make it especially large back on each lateral quarter where the cartilages are or should be.

This done, thin the wall all around below this groove; you are not going to hurt anything, as it has all got to come on new before a cure is effected. You will, no doubt, find it very thick, and if you thin it about one-half there will be plenty of it left. Then with the point of the shoeing knife cut a row of grooves all around the top of the wall and across the big groove; cut them in as deep as you can without cutting through, making them about an inch and a quarter long and three-quarters of an inch apart; and over the spot on each side where the main groove is widest put them only a half inch apart. Put on a plain, flat bar-shoe with the nail holes punched around the toe, a leather pad, a stiff pair of springs, and the usual packing. Apply a blister to the coronary band and let him stand in the stable a few days. When you bring him out you will look down on about the toughest looking pair of feet you ever saw, but how good they will feel to that dumb brute that has been suffering maybe for years. This relief is given on the same principle of cutting an old stiff shoe that pinched your foot. Did you ever have that experience? If you have you will better understand how this horse felt after this treatment.

In a week or two you will notice a roll of new wall coming down, carrying the circular groove down with it and as the springs are constantly expanding the heels, the new wall accommodates itself to the new order of things. and when it has fully grown out, the cartilages —if they have not become ossified—will drop back where they belong, the navicular

bone will perform its functions, and the horse will have a brand new foot, or rather a brand new case on the old, bruised and much abused foot. Keep the springs in for three months, but remove them and look after the bottom of the foot at least every two weeks.

The same treatment in modified form can be used in severe cases of contraction where the trouble is chiefly from the middle of the quarters back to the heels, and on cases that would not be classed as "hoof bound." The main groove in this case extends from the heel to about the middle of the quarter, on each side of the foot, the front part of the wall not being touched. The operation will give immediate relief and the horse can be put to work as soon as the soreness caused by the blister subsides. This operation is known as the "Dunbar system," and was first introduced and its merits demonstrated to the horseshoers of the East many years ago by Professor Daniel L. Corbin, of Friendship, N. Y., a famous horseshoer in his day, who spent the best years of his life in the interest of the horse, by studying the anatomy of the foot and leg and inventing special shoes for his relief and for the correction of faulty action. Professor Corbin is still living (1916) enjoying the fruits of his diligent and commendable work.

I wish to add that this "scoring," as it is called, is an excellent way in which to bring out one quarter that has "fallen in," or where the foot is only contracted on one side. The scoring is done on the affected side, and the force of the spring, by reason of a clip at the

outside heel of the shoe, will be concentrated on the part to be remedied, and the results thus obtained will be highly pleasing. The horse need not lose a day's work, unless you put on a severe blister, which, in this semi-operation, will hardly be necessary. In cutting the notches across the main groove, I wish to caution against cutting the coronary band, for even the smallest slit in it might leave a weak spot or groove in the new wall; therefore, begin the cross-scoring slightly below the band.

CHAPTER X.

Hitting the Elbows.

There is one great consolation in owning or driving a trotter that hits his elbows, and that is, he will never hit his knees. Elbow-hitting is not confined to trotters, however; pacers hit their elbows occasionally, but they are not very numerous. The trotter that hits his elbows usually has quite a long, sloping pastern; his foot sets well in front of him and the longer his toe is and the more weight he carries the higher he will carry his foot when in motion. It is generally believed that if a horse's toe is allowed to grow out it will retard his action, and he will not go so high. This theory works all right while the horse is going very slow, but when you ask him to step along you will, in most cases, discover that the long toe makes the horse put more energy into his effort to break over and when the foot leaves the ground it leaves with a snap and the faster the horse goes, or tries to go, the greater effort to get

over the point of resistance and the higher the foot will go when the revolution is made. Cutting the foot down close is not a safe thing to do on a horse that hits his elbows, although his toe must be reasonably short. But a horse gaited like an elbow hitter hits the ground a terrific blow and if his foot is dressed close, he will feel the sting and if he resents it by shortening up in his stride his elbows will get the benefit of the change. I would advise, therefore, to leave such a horse a fair foot, and shoe with the lightest shoe he will balance in. I do not like a bar-shoe on a horse of this kind, but a plain, open shoe, squared a little at the toe, beveled off well on the edges and at the heels, which should be drawn down thin and fitted short and close. The shoe from the last nail hole back to the heel should be about one-half the thickness it is in the center or "ball" of the foot. An elbow-hitter lands harder on his heels than any other kind of a trotter, and with the shoe shaped in this manner, he will land nearer level, as the toe of the foot is turned slightly upwards when he lands, and when the reverse action comes there is very little friction to combat. It is very seldom that a horse gaited like this requires a quarter-boot, but if you put one on as a precautionary measure, use the lightest bell-boot you can get. A tight-fitting quarter-boot or a thick heel-strap should not be used on a horse of this kind. They add a certain amount of weight to the heel, a thing to be avoided, and the manner in which he hits the ground is liable to force the boot or heel-strap up against the tenderest part of his heels, causing an inflamed condition that will lead you to

believe that "the boy buckled those boots too tight and they pinched his heels." The light, fleece-lined, felt bell-boot will give him all the protection he needs, and if the track is heavy or the least bit sloppy take them off also. Usually the trotter that goes to his elbows is possessed of plenty of hock action—perhaps it's sympathetic—and a very light hind shoe will suffice.

Pacers hit their elbows too, and if I was going to help a friend cash his life insurance, I'd present him with an elbow-hitting pacer that wore hobbles. I recall a pacing mare that raced on the Grand Circuit about sixteen years ago, that had a pair of misfits hung on in front. One foot was short with a high heel; the other was long with a low "underslung" heel. The angle of the latter foot was 44 degrees and the high-heeled one stood at about 50 degrees. One foot grew all to toe, the other grew straight down. We would lower the heels on the high, straight foot and build up the heels on the other in order to even up matters, but when the low-heeled foot would grow out—just like a duck's foot—she would begin to rap her elbow on that side. I remember a heat, where she was leading into the stretch and looked to have her field beaten, when bang! went her slow foot into her elbow and she slowed up as if she carried air brakes and they were all set. Some time in your life you have bumped your elbow—your "crazy bone"; remember how it was paralyzed for a few moments? That is what happened to this pacing wonder with the front feet that were not mates. That is what is liable to hap-

pen to any horse that hits the elbows. If we had changed the front shoes every week on the pacer I have referred to, she would not have hit her elbow. But we didn't, and the financial loss to the owner and driver on the one heat I have described amounted to many times the cost of her shoeing for the entire season.

I have seen young pacers go to their elbows that, if their toes were shortened and a very light rim or sweged-shoe put on, would have lengthened their stride, increased the rapidity of their front action, and stopped pounding their elbows. It is a disagreeable fault, but it can be cured. What will stop one may not cure the next one, but if you will give the subject in hand careful study you will succeed in remedying the trouble.

CHAPTER XI.

Navicular Trouble.

The trouble commonly known as navicular disease is another of the many foot afflictions to which the horse is heir, that can be avoided by proper care of the feet. A contracted condition of the foot, high heels and general neglect are the causes of this most painful foot trouble. The navicular bone, a small, triangular-shaped bone that lies between the wings of the coffin bone and forms the junction between the small pastern bone and the coffin bone—known as the navicular joint—becomes wedged in its position by reason of the closing in of the walls of the foot. The extensor ligaments that run down under it and branch out

over the bottom of the coffin bone are constantly calling on the navicular bone for action, and when the free articulation of this little bone is interfered with by reason of its cramped condition or position, owing to the contracted heels, it is impossible for it to perform its natural functions. This is not the exact language the dean of the veterinary college would use, but we are trying to tell this little yarn in the plainest of language. Any pressure, therefore, on the frog causes pain. If the frog is hard and dry, and there is much pressure put on it, the horse will hold the foot off the ground or rest it on the toe. If both front feet are affected he will lie down if allowed to, but that does not free him from the pain.

Lower the heels and shoe as I have directed for contraction and corns, with springs, pads and bar-shoes. The shoe should be wide-webbed and thin, and in making the bar, "set it up" from the foot side, so that there is no possibility of its pressing on the frog. The bar should be wide, as its purpose is to protect the frog from injury and pressure. The foot should be well poulticed before shoeing and the coronary bands well stimulated with a blister or a penetrating liniment after shoeing that will remove the soreness and keep the foot in a soft and pliable condition. If you can possibly get along without them, do not put any calks on the shoes, and break them over slightly at the toes.

CHAPTER XII.

Heavy Shoes and Pads in the Winter Season.

I believe that trotters and pacers would have better, sounder feet if they were shod heavier in the winter and early spring months when their feet are being "renovated," or when their work is necessarily slow jogging or road work. The idea of wearing practically the same weight shoe in the winter that is worn during the racing season has never appeared to me to be the proper thing, except in rare cases where the horse could not carry weight and "get out of his own way." Weight in shoes or pads on the road gives the horse more protection against injury. Especially is a heavy shoe or pad, or both, beneficial if a horse has weak or injured tendons or has been let down for some time, and you are going at him again in an effort to get him to the races the next summer. I do not mean to advise putting on a lot of cumbersome weight, but more—considerably more —than the horse carries or used to carry when he was racing. Carrying the weight he hits the ground without fear; it gives him more action—ankle, knee and hock action; gives him muscle and with the toes squared he learns to carry his feet straight, etc. There are a good many very good reasons why you should add more weight to the racer's foot equipment when he is not in active training. There is another thing in favor of weight carrying at certain times. It will often make a horse do something you have been praying he would do, but you didn't know how to make him do it. A horse will get beaten a few times; he is not just

right; the teamster concludes he is a bit stale, and has his shoer put on a heavy shoe and pad, and tells the boy to give him a short journey out on the road every morning because he is "track sick." The boy reports that "he is not track sick, boss; he tried to run off with me this morning." The next morning maybe the owner or trainer breezes him a mile and he feels so good they decide to start him. Of course, it wouldn't do to start him with all of that "junk" on his front feet, and his old, light plates are put on, and as soon as the teamster warms him up he notices that he is not as well balanced as he was with the heavier shoes and pads. He may go a heat or two and get beaten and then, as a last resort, have the shoer put on the shoes and pads he had just taken off. Presto! he can fly! and he reels it off one-two-three. It was not the weight altogether that balanced him; it was the protection he got from it and the pad. It gave him more confidence, and he carried the extra weight much easier, balanced, than he did the lighter shoe, straining to do something he could not do, while the track was stinging his feet at every stride. The trainer will learn from this experience that he has been shoeing his trotter too light, or has neglected to give his feet proper protection. Also it may lead to an investigation that will prove to his entire satisfaction that the horse is suffering from corns, or some other foot ailment, and with this corrected and his feet protected properly in future he continues to race month after month and season after season, and his successes can be traced back to the day the man in charge de-

cided he needed a rest and had the heavier foot wear put on.

While on the subject of weights I will tell of an experience I had at a Southern training camp with a good trotter, owned and driven by a good man and a good trainer. This horse was five years old, had had bad tendons for three years, owing to hard training in his two-year-old form. He had no record, a world of speed, and for three seasons Mr. "Faithful" had tried to get him to a race, and every time he thought he had him ready he met with disappointment because at the final "rehearsal" the tendons would give way and then he would go through the regular routine of blistering and rest until the next spring. For three years this horse had worn a seven-ounce front shoe and bandages and cotton nearly all of the time excepting when he was blistered, and on the occasion of the last breakdown the much discouraged owner-driver, after a discussion lasting nearly an hour, decided to shoe him heavy, drive him all winter to a runabout over all kinds of roads, cut out all wash and burn the bandages and cotton. When he left the shoeing emporium he carried 24 ounces in rubber and steel on each front foot, and the new treatment was on. Thirty days after that I rode behind him over the brick streets at a 2:15 clip for a short distance. He would jog a 2:40 shot all day nearly, and enjoy it. He never wore a bandage after that, never took a lame step, secured a race record of 2:12¼ the following year on a half-mile track and 2:09¼ on a mile track the year after, winning a number of long drawn-out

races and was then retired with his legs as smooth and hard as rods of steel. He raced in a shoe and pad that weighed nine ounces, and in the winter he carried 20 ounces on each front foot.

We are all familiar with the great value of bandages and cotton, blistering, strengthening washes, etc., but in this particular case the horse had been doctored too much. His feet and legs had been swathed in swabs and bandages for years, keeping them too soft. The owner was looking for something to crack most any time and was never disappointed until he made the decided change above noted. Twenty ounces on each front foot is quite heavy, but a shoe and pad weighing from 14 to 16 ounces is not too heavy with a hind shoe weighing from eight to ten ounces. It always seemed to me that a horse appeared to notice the change from heavy to light shoes in the spring by going snappy gaited. The thoroughbred gets all of his preparatory work in heavy plates.

CHAPTER XIII.

Neglected Teeth Make Knee Hitters and Cross Firers.

There is many a horse racing each year that hits his knees or cross fires, or does some other disagreeable thing that the horseshoer is called on to remedy, that needs "shoeing in his mouth" more than he does on his feet. When he begins to rap a knee, cross-fire or stride short with one front foot, something he has not

been guilty of before, it is always a good idea to have the horse's teeth examined, especially so if he is a young horse. It does not require much of an injury to the tender lining of the cheeks to make a horse carry his head sideways or toss it up and down, thereby getting his body and feet out of line, or throwing himself out of balance. And when a horse is out of balance or his head and his legs are not working in harmony, do not blame him for doing things to himself that under existing conditions he cannot avoid. If a horse has formed the habit of carrying his head sideways and hits his knees all the horseshoers that ever went down the line cannot stop his knee hitting until his head has been straightened.

I have often been ridiculed by light thinkers for advising a trainer or owner of a horse that cross fired badly, or hit the inside knee only when going around the first turn, to work him the wrong way of the track a few times. I have known horses of both gaits that would almost knock a knee off going around the turns the right way of the track that would hardly brush a boot going the wrong way. A horse will get into the habit of carrying his head out going the right way of the track, but when he is jogged or turned to come back he is generally out well in the track, and his head is either straight or turned in the opposite direction and his body straight. Of course, you cannot race a horse that way, but you can give him a lot of work in that direction, and while you are doing it you will be teaching his legs and body

to go straight and saving horse-shoeing expenses.

An ulcerated or a sharp, ragged tooth will do damage to a horse in a day that often takes weeks to remedy. And if his feet are made to do things they should not do, or have not done before, the veterinary dentist should be consulted before the horseshoer is asked to straighten him out. If you will follow this line of thought I believe you will find it unnecessary to make any changes in the horse's footwear if you are fortunate enough to secure the services of a first-class tooth artist. At least, I think this will be the result in the majority of such cases.

CHAPTER XIV.

Making the Shoes.

Making horseshoes by hand is now in vogue only in the shops where light harness, saddle and show horses are shod. Time was, and it is not so very long ago, that nearly all horses doing heavy hauling in the cities were shod with hand-turned shoes. But this has all been changed in the last few years and I look for the time to come soon when most all of the patterns of shoes worn by trotters and pacers will be made by machinery. In fact there are many shoes made by machinery at the present time that are well suited to the light harness horse, except when he is getting fast work or is racing. There will, no doubt, always be a demand for special shoes to fit special cases, but the question of different styles of shoes has been

narrowed down considerably in the last few years, so that the shoer who has a half-dozen swedges of the latest pattern on hand can make most any shoe that is called for now. Often times the toe of a foot has been broken off and the only sound place to nail a shoe to is back toward the heels. A toe-cap shoe is an excellent shoe to put on, as the cap will cover up the break in the foot and hold the front part of the shoe in place, because it will reach the sound wall up high that a nail could not be made to reach without danger from "crowding," and a couple of nails on each side back at the heels will do the rest. In the case of a hind shoe, often two small nails at the outside heel and one at the inside will be sufficient to hold the shoe in place for two weeks. When a horse lands on his toe and drives the shoe back, use a cap-shoe if you would save his foot and possibly his ankles from injury. If the shoe is worn off quickly at the toe and is driven back, as it surely will be, unless it is a bar shoe, it will spread at the heels. And if the horse is one of those close going fellows he is liable to cut an ankle or a knee with the displaced shoe before the driver discovers it. Especially is this true of hind shoes.

To make a toe-cap shoe, first cut the "pattern" or piece of steel the right length and draw out each end (see cut), leaving about two and one-half inches in the middle out of which the cap is formed, either by thinning this down with a set hammer or by drawing through a swedge. This thinning process should be done while the pattern is straight and when the cap

is thin enough, put the pattern in the vise and bend the thin part up towards the foot side of the shoe. You are now ready to form it into a shoe, and to do this you should use a wooden mallet, shaped like a turning hammer; do not punch the nail holes until you have fitted the shoe, then you will be enabled to put the nails

Pattern Blocked Out for Hind Toe-Cap Shoe.

in that portion of the wall best suited for them. A simple method sometimes followed in making capped shoes is to make and fit the shoe first and then braze on a thin piece of steel for a cap. It is an excellent method if you have had experience in brazing, but if you have not, the old system will work out more satisfactorily.

If a foot is "shelly" and you find it necessary to use a larger number of nails, or larger nails than you like to use, to keep the shoe in place, put on a side-capped or toe-cap shoe and, I am sure you will appreciate the good results derived from its use. Often a horse with a long toe in front has to wear a thick pad; the nails around the forward part of the shoe go up inside of the wall; and even a couple of good clips will not prevent the shoe from being forced back or over sideways. That is where the capped-shoe does its best work. It is not necessary always to make the cap high; more often a cap about one-half inch high will suffice.

In making a side-cap shoe the same general instructions apply. The pattern, of course, has to be "blocked out" at the proper place (see cut), and if you wish to make a cap on each side of the shoe, block the pattern out on each side when you start. If you think you would prefer to braze on the caps, fit the shoe and then, having drawn down a little tip on each end of the thin piece you are using for the cap, proceed to wire it to the shoe (toe or side) with annealed wire—number 28 will do—including in this wiring process a piece of copper

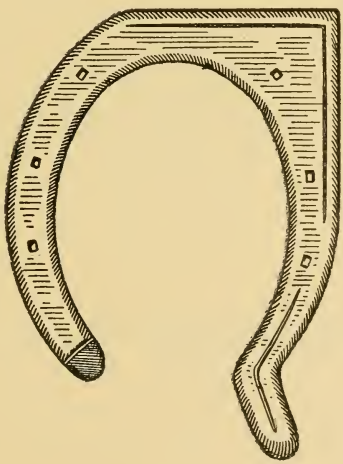
Pattern Blocked Out for Side-Cap Front Shoe.

wire—number 9—placed in the angle of the shoe and cap. This is all done when the shoe and cap are cold, and when you get it ready to braze, sprinkle the copper and the surrounding surface liberally with powdered borax and heat until the copper "runs" freely; do not hammer it; press on it all you wish, but do not hit brazed parts with a hammer or you will destroy the connection. When the copper "sets" —you can easily tell—give the shoe a quick dip in the water, cooling it just enough to raise the scales on it. Brush these off with a wire brush and set it aside to cool. It requires a little practice and a lot of patience to do these things, but there is nothing worth while in this world that is gained without a certain amount of effort.

CHAPTER XV.

Extension Shoes.

The extension shoe is a very useful shoe on a pacer that cross fires badly, or on a trotter that carries one hind foot in between his front feet. Made into a front shoe—open or bar-shoe—it is often used with success on knee hitters, both trotters and pacers. In preparing the pattern for an extension shoe, draw out the inside web first, notching out the extension squarely, then draw down the outside web at



Extension Shoe with Triangle Grab.

the heel (see cut). When it is bent into form the extension will be on a line with the toe of the shoe, and the distance it extends outside the foot is governed by the seriousness of the

case in hand and the width of steel used. Fit the shoe before punching the nail holes; by doing so you will be better able to tell just where they should be put. In cross firing cases it is customary to braze a calk or grab on the outside web. Sometimes this grab is extended across the toe of the shoe. A long trail is left on the outside and on this a set calk is also brazed. Some shoers simply turn a heel calk upon the end of the trail, but the long, brazed calk is better as it keeps the foot from twisting" when leaving the ground and stiffens the trail, thereby keeping it from "buckling" or bending up when the weight of the horse comes on it in landing. The inside heel should be fitted close and smooth—no calk. When used in front it can be used without calks with very good results on trotters, but I believe the best results are obtained with this shoe on pacers if a small, sharp calk is brazed on the side and around the toe and with low, sharp-set calks at the heels. I would especially recommend this shoe on knee hitting pacers that break over in a snappy, winding manner at the outside toe and in landing, set the foot over too far under the body. The extension and outside grab will have a tendency to make a horse break over square, take away some of the side-motion of the foot and when the foot lands it will come straight down and stay there instead of coming down too far under the body and slipping farther over after it lands. Once in a while a pacer will be found that needs this style of shoe on one front foot only—the one he hits with—and my advice in a case of this kind is to use it on that foot and shoe the other foot as

you have been shoeing it, for if it happened to interfere with the action of the foot he does not hit with, you might "change his bark into a whistle"—make him hit with the foot that has not offended and cure him of hitting with the other one.

This shoe is one of the remedies for one of the evils brought about through the old method of "ringing" or driving a colt in a small circle previously referred to, when he is young and before the bones and muscles of the legs and feet have matured. When a horse's front feet are "set" just the same and the action is identical, use the same style shoe on both feet.

CHAPTER XVI.

Outside or Half-Swedged Shoes.

Half-swedged—outside or inside—shoes are very useful and very popular. In making them you can leave the inside webb flat, or you can draw it through a half-round swedge, making

Pattern Blocked Out for Regular Cross-Firing Shoe, Swedged Outside, Half Round Inside.

a more artistic job. Cut the steel long enough for two shoes. Balance it on the hardy and mark the center. Draw the ends down in the half-round swedge, thus making the insides. Then smash the other two halves down in the grooved swedge, leaving about one and one-

half inches for an outside heel. Cut the bar in the middle and you have two "molds" and you may be sure that they are mates. Shoes made in single patterns are liable to get on your nerves when you discover that you have carelessly made both shoes for the same foot. The inside sweged-shoe is used with good results on knee hitters, both trotters and pacers, and is especially good when used on a horse that toes out very badly in front if fitted close and short at the outside heel, leaving the inside full length and, if occasion requires, putting a block heel or a set calk on it.

CHAPTER XVII.

Swedges or Dies.

I have often been asked "where can I secure swedges for making track shoes?" Every horseshoer is supposed to be his own swedge-maker, and I guess every horseshoer has his own individual ideas on how they should be made and what they should look like when finished. If you are in touch with a good hardware store, you can get the "blanks" for making your swedges and by doing so you save yourself a lot of hard work. In ordering blanks (blocks of steel with shanks on to fit in the square of the anvil) be sure and state the exact size of the square hole in your anvil. If you are unable to get blanks, make the block out of any piece of steel you have convenient. I have made them out of old wagon axles that were good enough to last for years. When you are ready to make the creases or form the swedge

proper, mark it—hot—with a hot chisel and then set down the convex side of the swedge with a small set hammer. A very good idea is to form a tool out of inch-square steel that is shaped on the end just the size and pattern you want the swedge to be. Mark the block out with the hot chisel, and then with it, while hot (the block), drive the forming tool down into it. A little practice is required to make a good swedge, but it will pay you to spend the time and labor necessary to make at least a half dozen. By making the block long enough you can make several swedges in one piece. A very convenient swedge to have around is one with a good groove to make outside swedge shoes, and a couple of half round channels in it of different sizes in which to make the inside of the shoe. After the swedge is made, let it cool slowly in a box of slaked lime or bury it in the cinder pile for a few hours, putting it away at a cherry-red heat. This will anneal it so that it is easily filed to make a finished job. No cut that can be produced will show exactly how to make a swedge. You must use your own judgment and make an assortment so that you will be prepared to make a light or a deep swedged shoe; or, in fact, any kind of shoe that the trainer calls for or the occasion demands.

With this swedge at hand you are prepared to make cross-firing shoes without changing swedges. Do not attempt to temper swedges; they will break easy enough without hardening them.

CHAPTER XVIII.

Calks and Grabs.

I have known trainers and owners that would shoe every horse in their stables with calks and grabs and leave the shoes on a month if they did not wear out sooner. In other words, the horse would have grabs and calks on about a week or ten days, the calks having worn off in that time; and the balance of the month they would be working in smooth shoes. The calks would be put on at every shoeing, and I used to think that some of the fellows who paid the bills ordered it done, fearing they would not get their money's worth otherwise. And again, perhaps it was force of habit; sometimes a man will form a habit of shoeing all of his horses alike. If a certain shoe or the method of its application happens to benefit only one horse in the outfit, the whole string would have to be given a tryout with it. If a pacer goes wide behind and runs down, tires a little at the end of the mile, shoe him with a low, sharp toe-calk straight across the toe of the shoe and also a low heel-calk, the inside one dull, the outside one sharp and brazed on lengthwise of the short trail. The calks will pull him together, give him a firm hold on the track and that "trembly" condition of his hind legs will not be so noticeable after a hard heat. All horses cannot go in calks, but most of them can on a track that has a deep cushion or a "rotten" surface.

I believe that many a big-gaited trotter has lost his race on a deep, sandy track or a track

with a loose surface, simply because he was trying to trot over it in flat, smooth shoes that suited him on a track that was hard, or at least had firm footing. A horse, trotter or pacer, with a long, sweeping stride that wants his feet to slip forward a little every time they hit the ground, will not do well if shod with rim shoes or calks. The rims or calks will stop him too much; make him muscle-sore and shorten his stride; but with a swedge, or crease across the toe of the shoe, or if the toes of the shoes—all around—are scooped—convexed—the forward motion will not be interferred with, and when the reverse motion comes, there will be sufficient grab at the toe to hold him and keep him on his stride.

The horse with the round, full motion at both ends or the one that goes "choppy" and very rapid all around, can wear low grabs and calks to good advantage, because when his feet land they come down straight, are picked up the same way and the reverse action has really begun before the foot hits the ground. That kind of a horse will trot in the mud or on ice, or any old track, but the calks or rim shoes will benefit him.

CHAPTER IX.

Bar-Shoes Behind.

It is a mistaken idea that bar-shoes should be used only on the front feet. There are many times in the course of the racing or training season when a bar-shoe on your horse's hind foot will prove beneficial. Of course, they cannot be as heavy as the front bar, but a thin,

light bar affords a lot of protection to a frog that is being made too much use of—getting too much pressure—because the horse's heels are low and the frog is large and prominent. Then again, one or both heels or quarters of the foot may be weak and broken, and a shoe with a wide, thin bar putting a large share of the horse's weight onto the frog will save the foot from further injury and possible lameness.

And again, a strong-going horse may spread his hind shoes—they are usually light anyway—and he may spread the heels of his foot at the same time. A bar-shoe with a clip drawn up at each heel will not only keep the shoe but the heels of the foot in place. If a horse has been injured in a hind foot and it is found necessary to put a pad on that foot, a toe-cap bar-shoe will hold it in place; and it will only require four nails at most to put it on. If I owned a trotter with a long, low, gliding motion behind and his heels were low and his frog wide and prominent—you recognize the foot and the action—I would shoe him with a capped-shoe, convexed a little or grooved across the toe, with low, flat heel-calks tapered down to the shoe, which I would make into a bar shoe, and under this I would put a thin, hard, aluminum pad or plate, and shod thus he would get the money. When he went forward there would be nothing to stop the stride, when he reversed there would be something at the toe to hold him. The cap on the shoe would keep it from driving back and the thin, aluminum plate would protect the frog from injury or excessive pressure that would have a tendency

to spread the foot too much. Try this plan some time.

CHAPTER XX.

Aluminum Shoes.

Aluminum shoes were pronounced a failure a score of years ago, the principle reason for this verdict being that they wore out too quickly, which was true. But there is a hard quality of aluminum made now that, if properly worked in the process of making the shoe, will give the utmost satisfaction where a light shoe is required that will cover and protect a good portion of the bottom of the foot. Aluminum can be bought in almost any sized strips or bars, but it is advisable to get it in bars large enough so that it will require considerable hammering to draw it down to the proper size and weight for the shoe. Never, under any circumstances, put aluminum in the fire; work it cold and keep it cold by dipping it in clean, cold water every few minutes while you are working it. If you do not it will heat under the hammer blows and you will destroy its texture. The more you work it and the colder and wetter you keep it during the process of "drawing" it down, the more you will refine and toughen it, thereby guaranteeing a satisfactory job. I have known four-ounce front shoes made in this manner to last from four to six weeks in the training and racing season.

You can make a very neat bar-shoe out of aluminum by drawing the heels out and "scarfing" them the same as if you were going to

weld them together. Bend them across, using the point of the anvil horn in making the bend, smash the parts together, then punch through them and put in a couple of copper rivets. After you have filed the bar off smooth, you can hardly tell where it is put together.

You can make toe-cap or side-cap shoes in the same manner as you would out of steel. If you wish to put on calks or grabs you can do that by dove-tailing them in or making them with a prong at each end and riveting on. Cast aluminum should never be used for horse shoes.

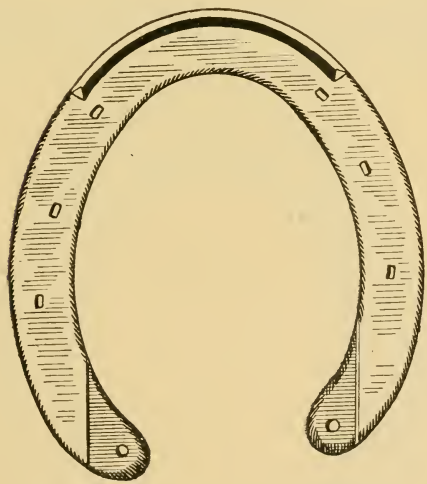
CHAPTER XXI

The Last Word.

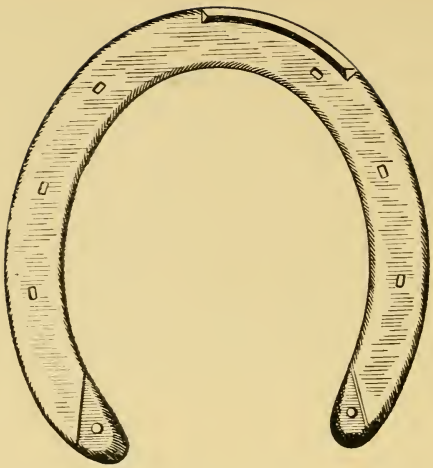
Shoeing horses is an art that requires years of practical experience and scientific study to master in all of its intricate forms. To the man who is naturally fond of a horse the study of his action at various flights of speed is a constant source of interest and pleasure.

There is a vast amount of responsibility attached to the business of shoeing race horses. If, through ignorance of his profession or carelessness in performing his duties the shoer makes a mistake in shoeing a horse for an important event, the driver's reputation as a reinsman suffers and the horse's prestige as a race horse is impaired, to say nothing of the financial loss to the owner, and sometimes to the public.

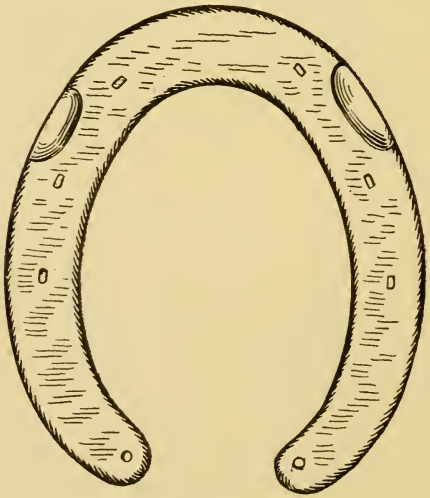
[Note.—The horse shoe cuts appearing in this work are cuts of shoes that have been worn by the most noted of the trotters and pacers of the last decade, and were made by Grand Circuit horseshoers who are adjudged the best and most skilled shoers in the world. These cuts, or the drawings for them, were made from the shoes by the author and have been published in THE HORSE WORLD from time to time to illustrate his stories relative to the shoeing and balancing of the horses that have been most in the public eye.]



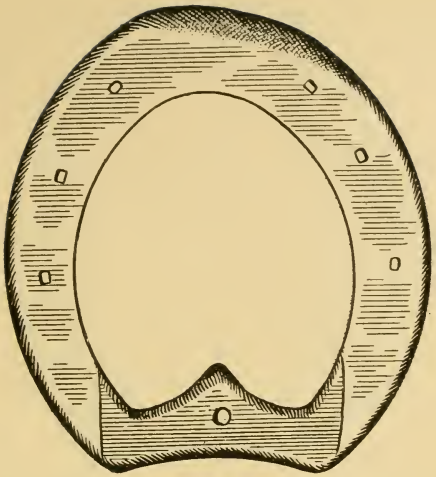
Front Shoe for Pacer, Circle-Grab, Set Calks, Beveled Sides and Heels—5½ Ounces.



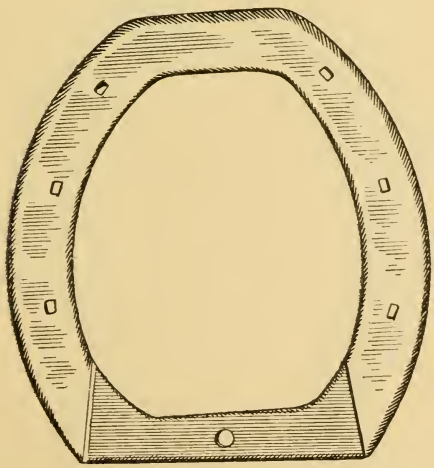
Front Shoe for Either Trotter or Pacer That Hits Knees, Inside Toe Grab, Set Calks—6 Ounces.



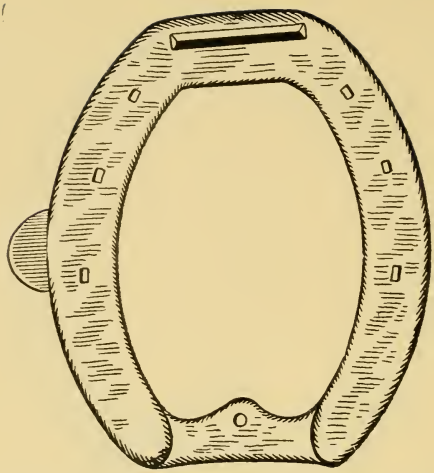
Front Shoe, Showing Foot Surface and Clips to Hold in Place—8 Ounces.



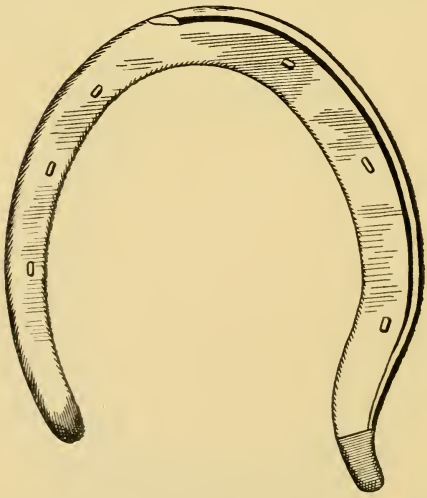
Front Shoe, Wide Web and Bar, Fine Set-Calks, Rolled Outside Toe and Sides—10 Ounces.



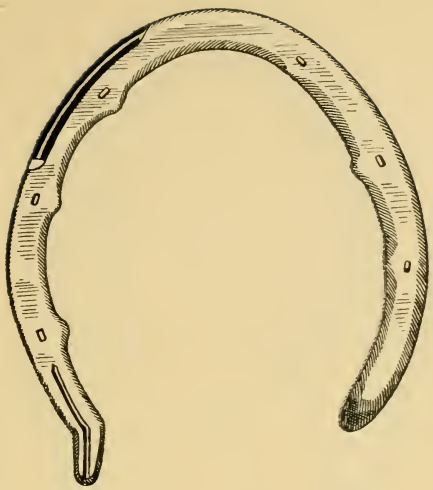
Front Bar-Shoe, Square Toe, Beveled Sides, Toe Broke Over, Long Fine Set-Calks—5 Ounces.



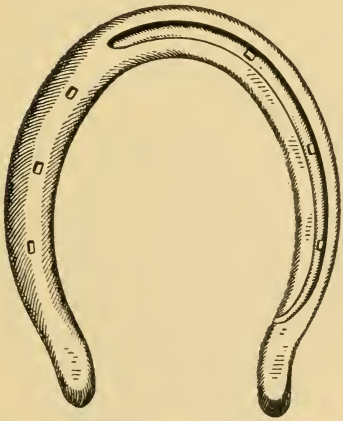
Front Bar-Shoe, Grooved Toe, Outside Clip, Bar "Set Down"—6 Ounces.



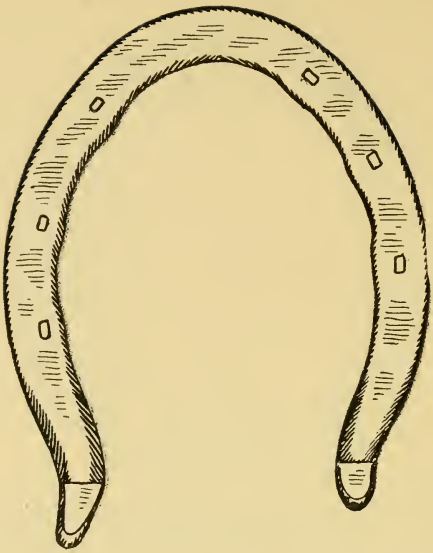
Cross-firing Shoe, Brazed Rim from Inside Center of Toe to Block Heel, Plain Inside and Heel —4 Ounces.



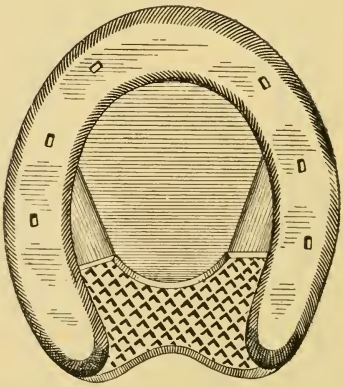
Another Pattern Cross-fire Shoe, Brazed Outside Grab and Heel Calk, Plain Inside—3½ Ounces.



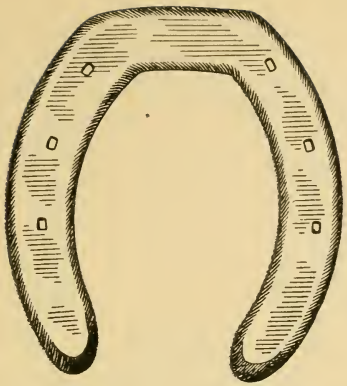
Outside-Swedged Cross-firing Shoe, Inside Half-Oval, No Heel Calks. For Trotters and Pacers—5 Ounces.



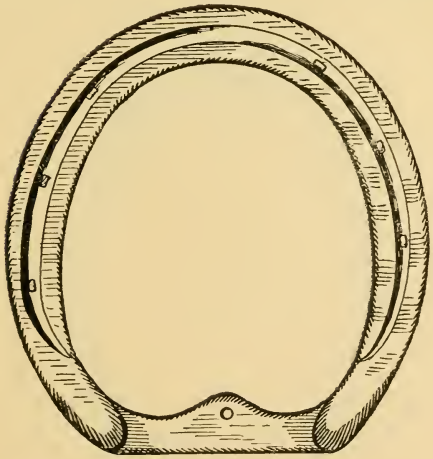
Full-Toed Hind Shoe, Low Heel Calks—3½ Ounces.



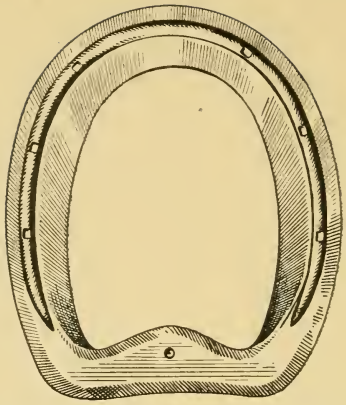
Plain Front Shoe and Rubber Pad, Rolled Toe—
11 Ounces. Good for Scalpers.



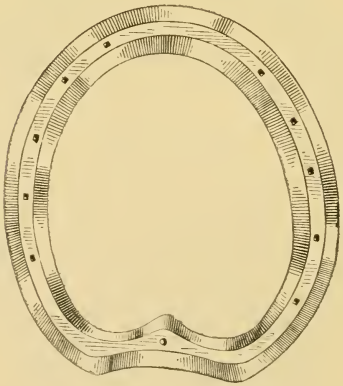
Square-Toed Front Shoe, Plain—8 Ounces.



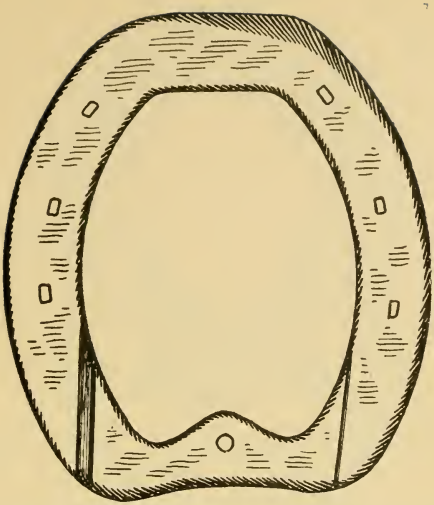
Front Swedged Bar-Shoe, Heavy Crease, Beveled Edges and Heels, Bar Set Down—7½ Ounces



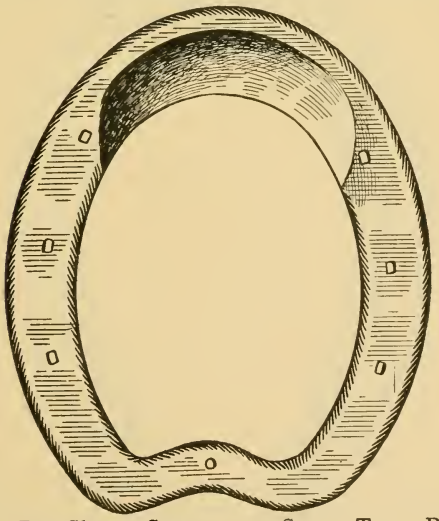
Front Shoe, Wide Web, Heavy Bevel and Crease,
Flat Wide Bar—10 Ounces. For Scalper.



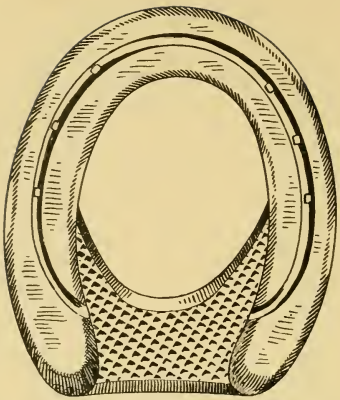
Front Bar, Convexed, Heavy Crease, Outside Edges
Knocked Down All Round—10 Ounces.
For Scalper or Knee Hitter.



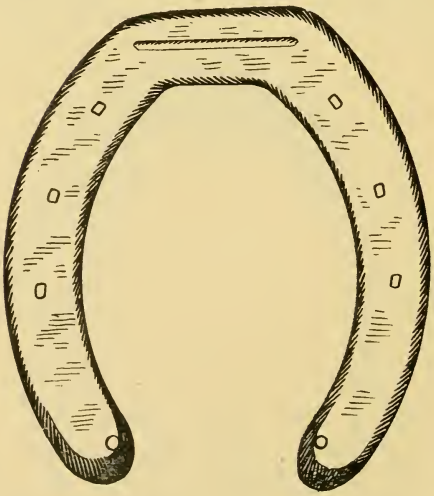
Front Bar, Flat Web, Rolled at Outside Toe, Heavy Inside Calk, Fine Outside Calk, Beveled Edges. For Scalper or Knee Hitter—8 Ounces.



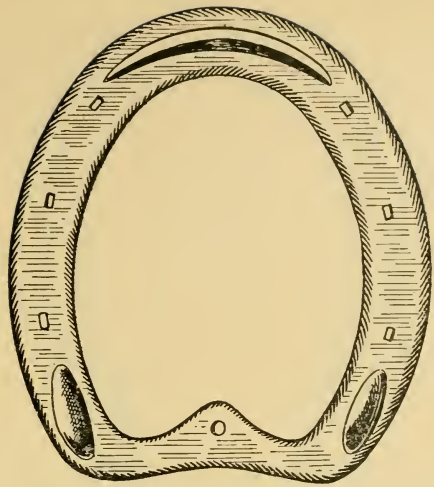
Front Bar-Shoe, Spoon or Scoop-Toe, Beveled Edges. For Pacer or Trotter—7 Ounces.



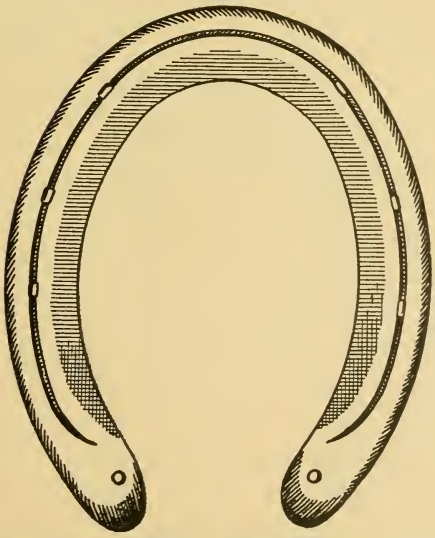
Front Swedged Shoe with Rubber Pad, Cut Through at Heels—9 Ounces.



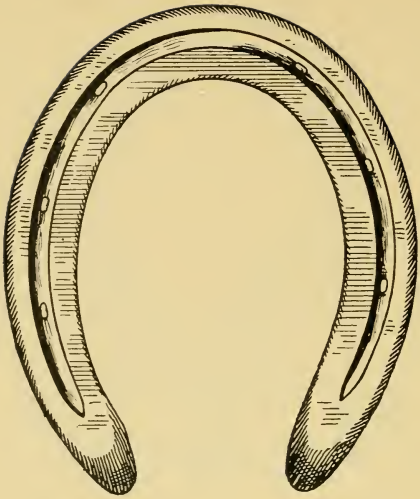
Square-Toed Front Shoe, Creased Toe, Beveled Edges—7½ Ounces.



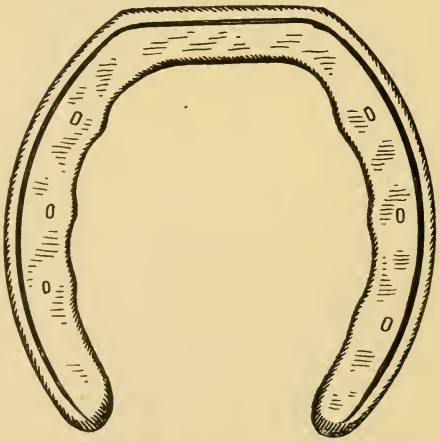
Uhlan, 1:58; 6-Ounce, Bevel-Edge Bar-Shoe, Tapered Blunt Calks, Creased Toe.



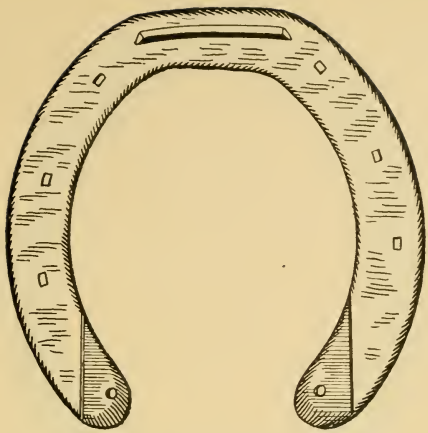
Convexed, Beveled Edges, Light-Crease Front Shoe —7 Ounces.



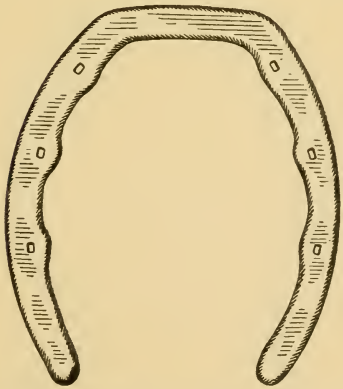
Front Shoe, Heavy Swedge, Beveled Edges—
6 Ounces



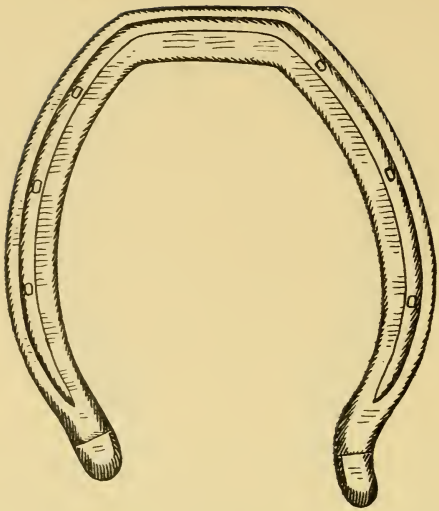
Front Rim-Shoe, Square Toe—5 Ounces.



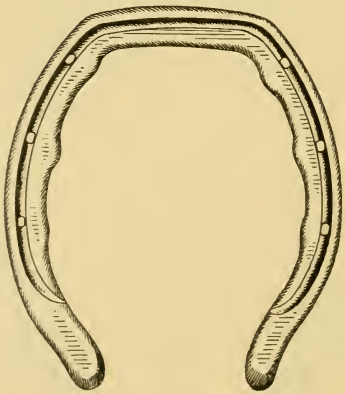
Front Shoe, Creased Toe, Set-Calks, Slightly Rounded Edges and Toe Squared—6½ Ounces.



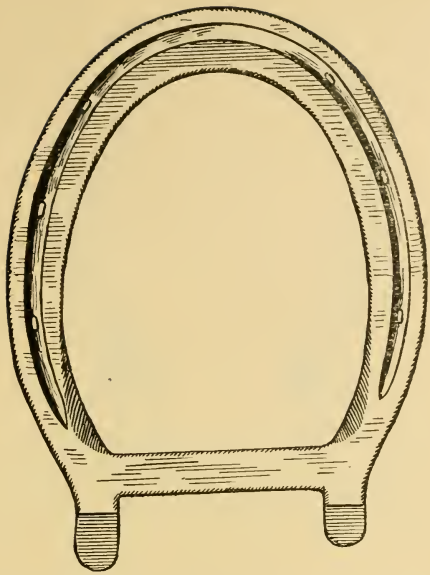
Square-Toed Hind Shoe, Plain—3½ Ounces.



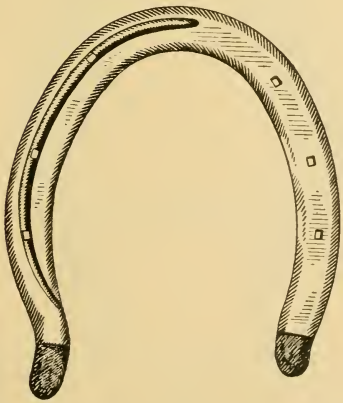
Square-Toed Swedged Shoe, Heel Calks—5 Ounces.



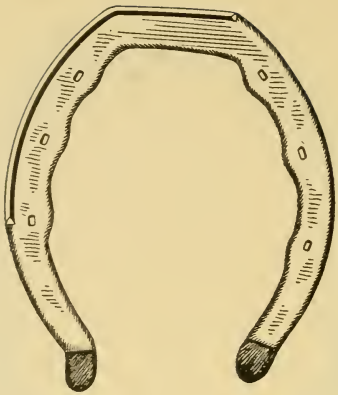
Square-Toed Hind Shoe, Swedged, Plain Heels—4 Ounces.



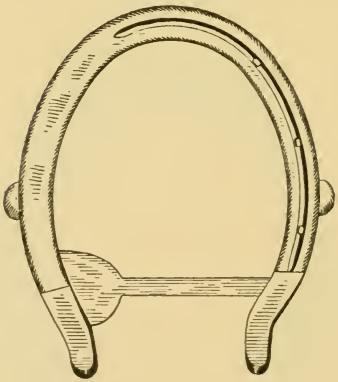
Swedged Bar-Shoe for Hind Foot, Block Heels, Full Toe—4 Ounces.



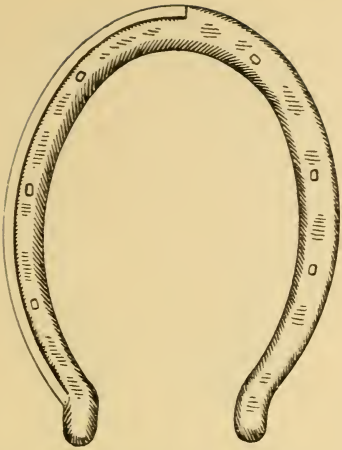
Outside-Swedged Shoe for Trotter, Block Heels—5 Ounces.



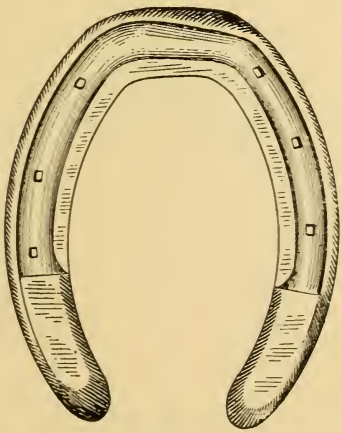
One Kind of Cross-firing Shoe, Brazed Toe and Side Rim, Block Heels—4½ Ounces.



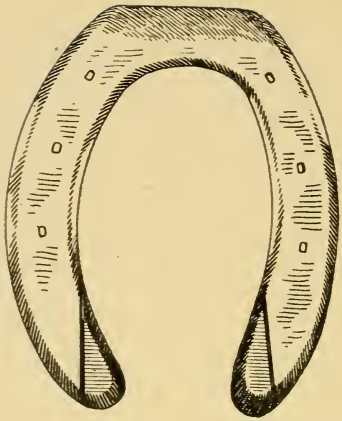
Hind Shoe, Half-Swedge Bar, Long Sloping Heel-Calk, Bar Wide Inside to Protect Bruised Spot, Clips Both Sides—6 Ounces.



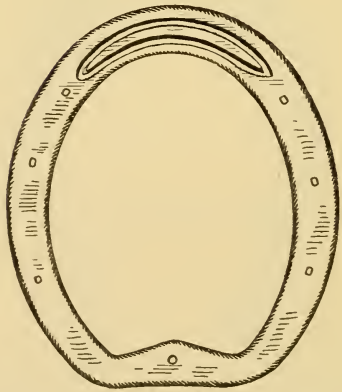
Hind Shoe, Very Light Outside Swedge, Beveled All Round, for Colt Trotter or Pacer —3 Ounces.



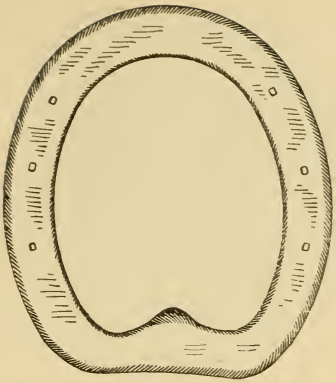
Heavily Grooved Front Shoe, Rolled Off at Outside Toe, Flat Heels, Beveled Sides and Heels—5½ Ounces.



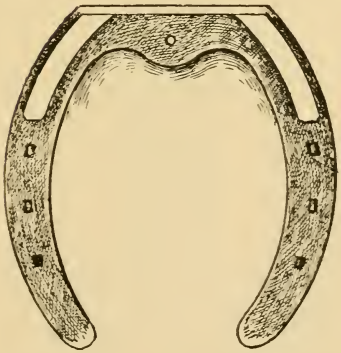
Front Shoe, Square Toe, Thinned and Beveled far Back, Long Fine Set Calks, Beveled Edges and Heels—6 Ounces.



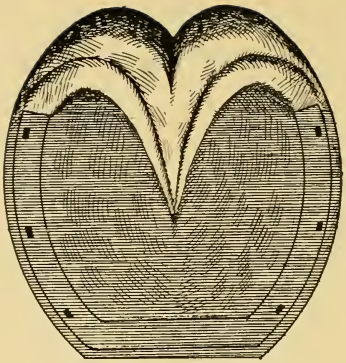
Front Bar, Double Crease at Toe. (Corrugated Toe) —6 Ounces.



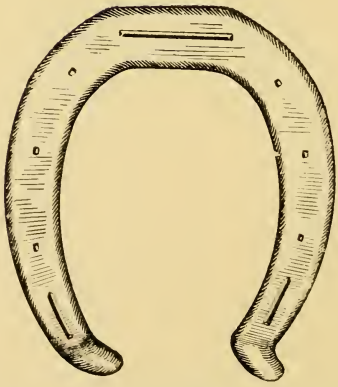
Plain Bar-Shoe, Beveled All Round—6 Ounces.



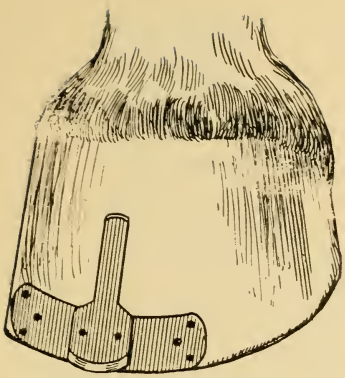
Open Toe Heel-Weight Shoe for Bad Scalper.



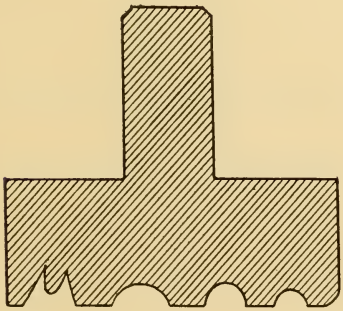
Three-quarter Square Toe-Tip, "Set In," Beveled Edges.



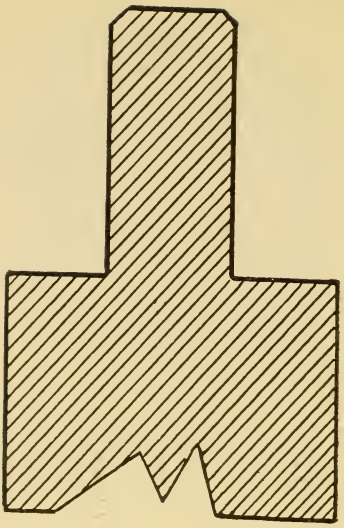
Three-Calk Heel-Cap Shoe for Cross-firer.



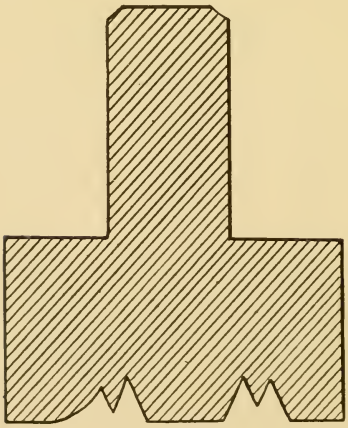
Showing How to Fasten a Toe-weight Spur Onto An Aluminum Plate Where the Hoof is Broken or "Shelly."



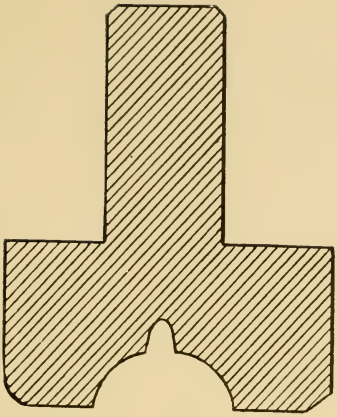
Combination Swedge.



Front Shoe Swedge.



Double Swedge for Light Front and Heavy Hind Shoe.



Swedge for Front Center-Rim Shoe.

Pattern Blocked Out for Making Side-Cap Shoe.

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